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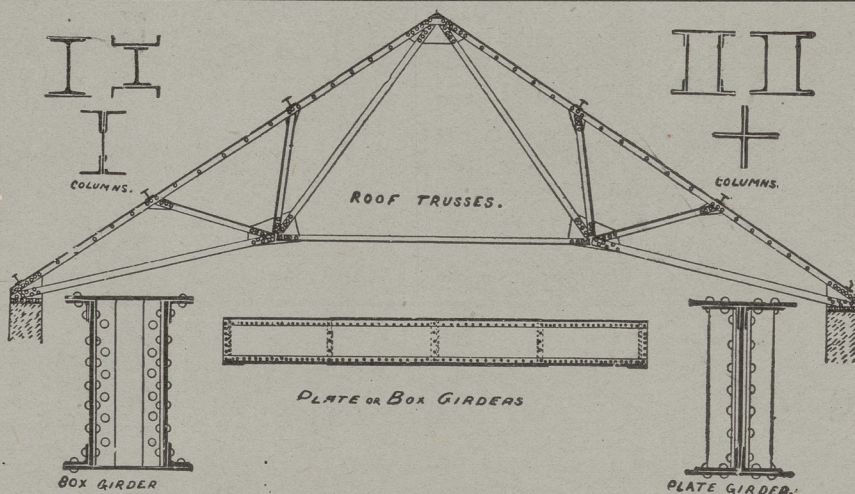
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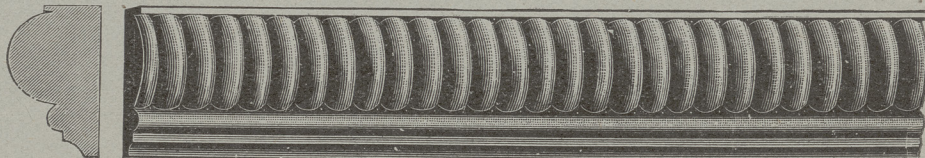
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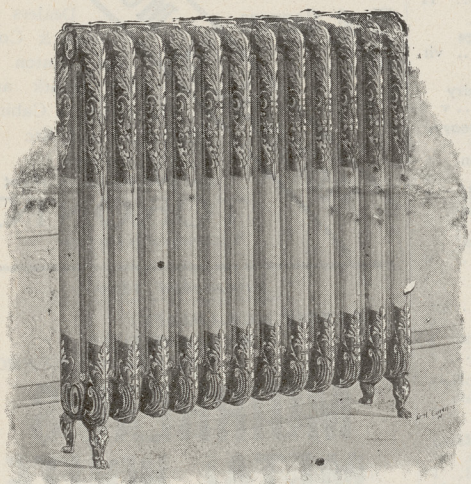
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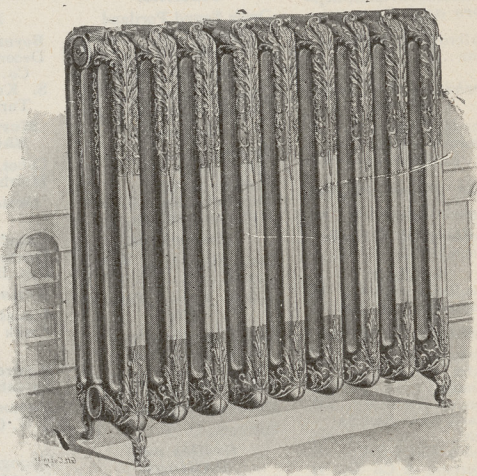
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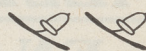
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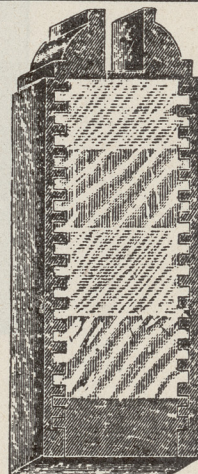
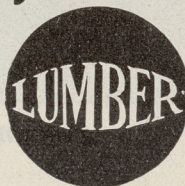
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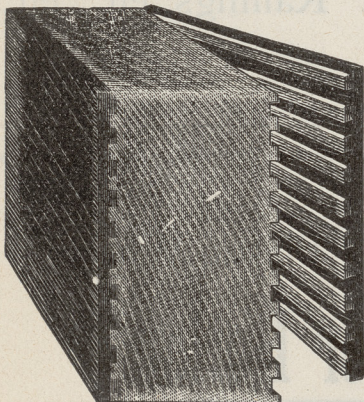
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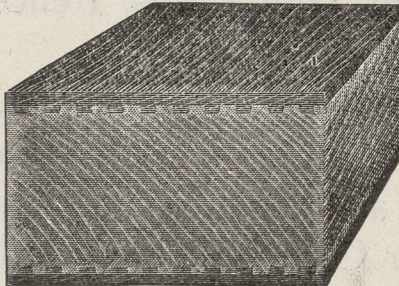
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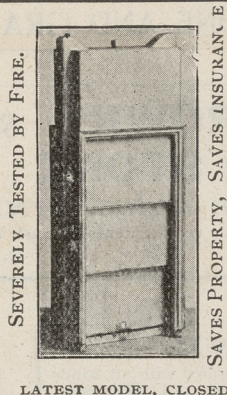
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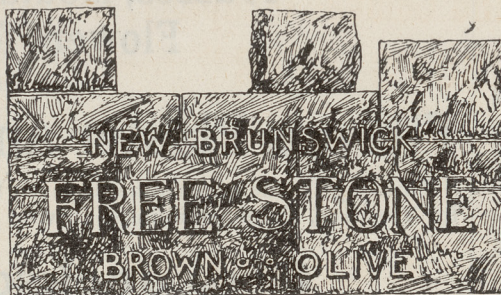
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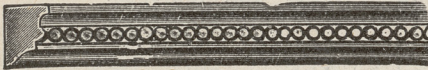
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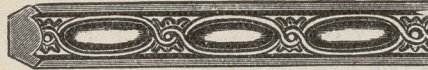
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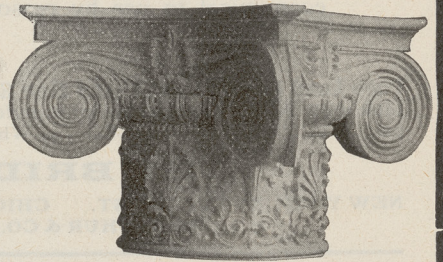
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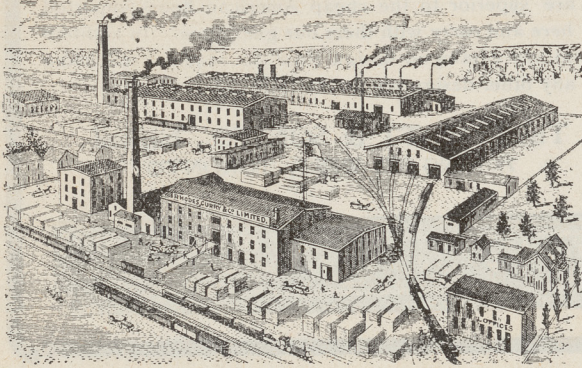
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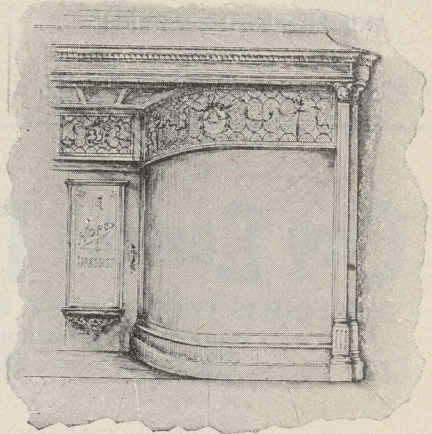
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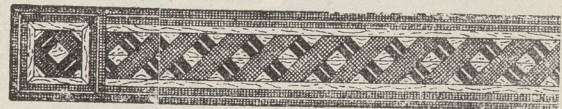
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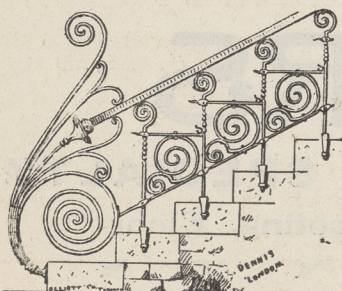
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The Canadian Architect and Builder

VOL. XV.—No. 180.

DECEMBER, 1902.

ILLUSTRATIONS ON SHEETS.

House in Rosedale, Toronto.—Beaumont Jarvis, Architect.
The William Davies Building, Toronto.—Burke & Howard, Architects.

ILLUSTRATIONS IN TEXT.

Buildings under construction for the Louisiana Purchase Exposition, at St. Louis, Mo.

ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

Photogravure Plate—Chapel in Ancient Cemetery of Arles, called Alescamps (Elissii Campe) by which it was known 18 centuries ago. Dante mentions it in the "Inferno," and Ariosto alludes to it in the Orlando Furoso.
Photogravure Plate—La Rue de la Grosse Dorloge, Rouen, built 1527.
Summer Residence at Beaconsfield, Que.—Andrew T. Taylor, F.R.I.B.A., Architect.
Bank of Nova Scotia, Toronto.—Darling & Pearson, Architects.

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To our readers every one we wish a Joyous Christmas and a Happy and Prosperous New Year.

Attention is directed to our **Students' Competition.** Students' Competition for a Suburban or Town House, to cost \$2,500. Particulars of this competition were printed in our November issue and again appear in the present number. It is hoped that architects throughout the Dominion will call the attention of their students to this competition and urge them to enter. An opportunity is afforded every student to test his powers and to learn where he stands in the ranks of the coming generation of Canadian architects.

The supply of competent men **Architects' Assistants.** in this line is at present much below the demand. A few years ago hundreds of draughtsmen were looking for positions. To-day all whose services are worth having are steadily employed at good salaries. There are a few floating about looking for employment, but they are the kind that no architect of standing would wish to have in his office. They either lack a proper understanding of the work that a draughtsman is expected to perform, or are so careless in their methods that they cannot be relied upon. A man belonging to this class on being sent to take measurements of some old buildings to which additions were to be made, was found to be out more than two feet in his figures

showing the width of the building, which had a frontage of only 70 feet. Inaccuracies scarcely less glaring marked his other measurements, so that it became necessary to do the work over again. Such "ass'tants" are simply a stumbling block and a source of annoyance to architects.

Close Planning. In these times of high prices for labor and material, the architect who desires to save his clients' money will give the most careful attention to the preparation of his plans with the view of securing the necessary accommodation within the least possible area. This is especially necessary in house planning, owing to the more costly interior finishings. In this class of work every additional two feet of area will add about six per cent. to the total cost of the structure. The necessity for the closest planning is therefore apparent. As regards the cost of building, there is nothing to indicate cheaper prices. On the contrary, there seems a probability that they may go still higher. Brickmakers have been unable to obtain fuel, and the kilns in the vicinity of Toronto are said to contain millions of unburned stock, which will not be available this year. This will probably mean an advance in prices next spring. The demand for iron and steel has been so great that the output of the mills for a year to come is said to be already contracted for. These facts would seem to prove the

continuation of the present era of high prices for at least a year to come.

Canada's Development.

CANADA has entered on a period of development which seems likely to rival that of the United States. Almost every day brings news of some colossal enterprise, and we are becoming so accustomed to such announcements that as a rule we receive them with but very moderate surprise. The declaration however by the authorities of the Grand Trunk Railway Company of their purpose to begin immediately the construction of a line by way of the Peace River Valley to the Pacific Coast, has naturally awakened the deepest interest from one end of the country to the other. The announcement is a declaration of confidence in the future of our great northwest territory that must greatly redound to the benefit of this country. The expenditure of something like \$100,000,000 in the construction of the new transcontinental line will help to extend and maintain for some time to come the prosperous conditions now prevailing, while the inflow of population following the opening up of a vast and fertile territory, will permanently broaden the market for manufactured products. The future greatness of Canada seems now to be assured and considering the rapid movement of events in these days, another decade will probably witness its realization.

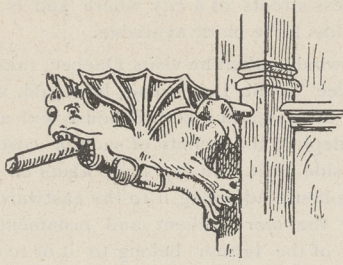
Is Your Wiring Safe?

THERE have been a great many fires lately in Canadian cities whose origin has never been satisfactorily determined and which have consequently been blamed on that force, to the layman so mysterious and uncontrollable, which is called electricity. The popular verdict may be right, or it may be wrong, but the fact remains that a large proportion of the electrical installations in this country, more especially the older ones, are in a state so dangerous that it is simply amazing. As instances, may be cited a warehouse which, devoid of attendants 90 per cent. of the week, and filled with cotton and woollen millstock, was wired without an entrance switch and equipped with the ordinary link fuses, absolutely open. The chances of a melting fuse igniting the bales not over eight feet away and directly below them were so great as to amount almost to a certainty; in fact the woodwork bears evidence of one fire which has already occurred and which was due, so we are informed, to electrical causes. Another case is a church in which the wiring, ramifying all over and through the building, mostly wood, and minus any attempt at bushing either with porcelain or even rubber at the many points where it passes through walls and floors, is supported by wooden cleats in its many wanderings past gas, water and furnace pipes of all descriptions. Investigation would probably show many such installations as these; is it any wonder that fires occur in them? Rather is it not a source of surprise that so few fires occur, especially when we consider the many chances that exist for line crosses, transformer breakdowns and lightning discharges bringing into the building potentials which are not only much greater than can be controlled by the insulation of the circuits, but which in addition are dangerous to life. A stitch in time saves nine; if you are a consumer why not spend the

comparatively small amount necessary to put your wiring in good shape, at any rate have it periodically inspected; if you are a producer look carefully to your own lines, especially those in the station itself, in addition urging upon your customers the necessity of keeping careful track of the electrical material, both new and old, both machinery and wiring, which they may from time to time have upon their premises. If these precautions are taken, the public will gradually become less skeptical of electricity as a fire hazard. There is no reasonable man who does not acknowledge that electrical illumination and electrical power, compared for instance with oil and gas, are not only the most artistic and convenient, but far and away the safest, it therefore behooves us all to see that as far as in us lies, due precautions are taken in the installation of this method of illumination.

Government Architecture.

THERE is a marked contrast between the architecture of government buildings in the United States and in Canada. The designs for public buildings prepared in the office of Mr. J. Knox Taylor, Supervising Architect, at Washington, rank among the very best examples of modern work done in the States. Evidently Mr. Taylor is himself a master of his profession, and has under his direction a staff competent to give effect to his ideas. We regret to say that in Canada the opposite conditions seem to prevail. Many of our government buildings erected in recent years are atrocities in design—the work in some instances of engineers—or stupidly commonplace and uninteresting. The latest example is the new chemistry building for the School of Practical Science, Toronto, the principal elevation of which was published in the illustration pages of our November number—rather an example of what to avoid than of what to follow. The design for this building is entirely unworthy of the splendid site which it will occupy. Besides showing an entire disregard of harmony of style, the design is in other respects lamentably weak, and perfectly lacking in interest. To particularize but briefly, we need only direct attention to the diminutive pediment in the center of the facade dominated on either side by larger ones, and to the character of the window openings in the upper stories. Realizing the importance of the building and the site, the Ontario Association of Architects urged the government to institute a limited competition for designs among leading architects in private practice. This suggestion having been declined, the privilege was then requested of examining the designs to be prepared in the Department of Public Works, and of making any suggestions for their improvement that might seem desirable. While this request was not refused, no definite information was vouchsafed as to when the plans would be ready, nor was a proper opportunity given for their examination a protest of the Toronto Architectural Eighteen Club was likewise disregarded. It was apparent that no outside suggestions or interference was desired. The result is before us, and is such as to confirm the rumor that this department of the Government service is run on political lines, and affords a shelter for incompetents and “has-beens.” It is time for a change which will secure beauty as well as utility in our public buildings.



GARGOYLE, CREWKERNE, SOMERSET.

OFFICE MANAGEMENT.

A series of excellent articles, on the business side of an architect's office, which have been coming out during the current year in the *Brickbuilder*, are worth reviewing and condensing for the use of architects in this country.

Method is essential, even in a small practice, and the different heads under which office method is here outlined must have place in some form in every office, if work is to go smoothly. It is better, as the author of the articles in the *Brickbuilder* says, to adopt, at the beginning of a small business, a comprehensive scheme which may be expanded, so as to avoid making revolutionary changes at a later date.

FILING is the first thing to be considered; to keep the letters, drawings and other documents, so that they may be surely and easily produced for use. The great thing is to keep everything that relates to any given building in receptacles devoted exclusively to that building, all marked with its mark. The most convenient mark is a number; the number which that commission bears in the office history. This marks the position of all files of this building in the set of files of their kind. The number serves for both file number for orderly arrangement and as a means of identification for every kind of document relating to the particular piece of work so numbered.

In connection with the file system two card catalogues are necessary. One is an index of addresses and the other of drawings. In the address catalogue tray every name connected with the office work or correspondence is inserted in alphabetical order and the card bears, below the name, the nature of this connection. Thus, John Smith who has below his and address—

"13—Residence on St. George St."

19—Stable on Huron St."

is a client for whom were done works 13 and 19. John Smith who has below his name and address—

"13—Plumbing and Heating,"

was the contractor for those works in the residence of the other Mr. Smith on St. George St. If there is another John Smith who has done nothing but introduce a friend, his letter and reply will be found in the miscellaneous letter file.

If then Mr. John Smith the owner writes about something on the second floor of his residence on St. George St., anybody in the office can find the drawing or any document relating to the question, by looking up Mr. Smith in the address tray and getting file 13 of the kind of document required. If it is a drawing he may refer first to the drawing catalogue. Here the raised guide card, marking off the other cards relating to this building, is marked "13 John Smith, Residence", and is of course in its numerical order in the tray. All necessary information about John Smith and his build-

ing may be written on this card against printed headings of location, description (brick, frame, etc.) total cost, cubical contents, cost per cub. ft., date of first contract, date of last certificate. After this may come a card, if the building is of any size, giving the scheme of numbering for the drawings. Thus, preliminary sketches may have a letter prefixed to them; if there is more than one series of these sketches they will be marked A, B, etc., before the drawing number. Then, when the design is settled, the working drawings may be subdivided, on the same plan that rooms are numbered in large buildings, so that the number itself indicates where to look for it, thus:—general drawings, 1-99, iron 100-199, plumbing, heating, electric light, etc., 200-299, scale details 300-399, full size details 400-499, etc. This being done each card may be filled with numbers—five on each side would make a convenient progression for turning over rapidly, as each card will count ten. The five numbered spaces on each side should be ruled off from one another and have also spaces left to enter the dates of beginning and approval of the drawing, the scale and the draughtsman. Here, as in all other forms, everything that is fixed should be printed; not only to save labour but as a perpetual reminder of what must be recorded.

LETTERS.—The modern practice is not to copy letters in a letter book, but to typewrite them in duplicate and file letter and answer together. With the increased use of stenographers and typewriters, correspondence may be made and should be made a complete record of business. Every time the owner gives instructions he should receive a letter accepting the instructions; every time a warning, or instruction, or order is given to a contractor a letter ought to record it.

DRAWINGS.—The stamp for drawings should have spaces headed as recording the initials of the maker, tracer and reviser, the date of the drawing, its building number, drawing number and issue numbers, besides a space to letter its descriptive title and scale. The architect's name and address will of course be part of the stamp. The essentials for filing, and for record in the issue book, are the numbers.

Drawings must be kept flat. It has been customary to do this by keeping them in portfolios and this has advantages for facility of handling folded drawings; but hanging appears to be the modern way, and it is certainly better for frequent handling. The drawings are clipped in files after the manner of newspapers and can be hung very close together, end on to the back of the closet. A closet a little more than 3 feet or 3 feet 6 inches deep is necessary and all drawings must be made or folded to hang from a file of this length. Hanging in this way, according to building numbers, and drawing numbers, drawings are easily found and used. Full sizes larger than the standard size of the file should be drawn on paper which is a multiple of that size, so that they will fold to match the other drawings. Bond paper 27" x 40" with a blank title printed in one corner, is in use for full size details, in the office of Messrs. Cope & Stewardson. These sheets are said to give good prints from lead pencil lines. Most details can be got upon paper of this size, and others can be folded to the same size. It is a great help to draw some details not only full size but at full length, but a drawing of this kind is intended

only to help the designer: it is a study, and is better condensed afterwards in small form for the working drawing, which needs nothing but the details, and which has to be handled and copied and filed.

BLUE PRINTS.—The articles in the Brickbuilder do not take notice of blue printing in the architect's office. There are blue printing establishments to which the work is sent out, and which render monthly accounts based on a charge per square foot. Orders are sent out by means of an order book made of alternate yellow and thin white leaves. By means of carbon paper and lead pencil the order is written in duplicate. The perforated yellow leaf is sent out with the drawing and the white book-leaf remains, to be used in checking the monthly account. Both yellow and white leaves are ruled and printed in the same form with headings under which to note the essential points, viz., the order number and date, the building number, the sheet number, the number of copies required, the kind of print (blue, black, etc.), the material (paper or cloth) and the size—first in the dimensions required and again decimally in square feet. This last column, when totalled on all the order slips of the month, gives immediately the means of checking the amount of the monthly bill.

ISSUE AND RECEIPT OF DRAWINGS.—A book should be always at the office boy's hand, ruled for record of drawings sent out. The headings of the rulings would be the issue number, the building number, the drawing number, title and description (tracing, print, etc.), the purpose of the issue, the issuer and the dates of issue and return. Receipt forms should be sent with the drawings, and if a receipt is not returned another form should be sent out. The guide in this case is the issue number. The entries in the book and the receipts filed are in the order of the issue number, and this number should be marked on a drawing when it is sent out. Every time it is sent out it will receive a new issue number. When the drawing is brought back the issue number points to the place where credit should be given, and the date of return is entered instantly. To find out where a given name or a given drawing are in the list, in answer to an enquiry whether certain contractors have received a drawing or where a certain drawing is, it is necessary to run the eye down the list of names or drawing numbers. This is said to be rapid enough.

W. A. LANGTON.

ORIGINALITY OF DESIGN IN ARCHITECTURE AT THE EXPENSE OF BEAUTY (SLATER)—HOW SKY-SCRAPERS CAN BE MADE MORE AESTHETIC.

EDITOR CANADIAN ARCHITECT AND BUILDER:

SIR,—Under "Notes" in your last issue, page 135, you cite Slater, vice-president R.I.B.A., as saying that "there is too great a tendency nowadays to mere eccentricity or originality among the younger architects, while beauty of design or aestheticism is neglected."

There is abundant truth in this, as witness many of the designs for even pretentious dwelling houses, which would be more appropriate as club houses at fishing and sporting stations in our forest reserves.

In your "C. A. & B. Students' Competition" at page 130, for the design of a dwelling house on a 50 foot lot, you very properly advise students that the adjoining buildings are within 10 feet of their respective boundaries, thereby leading them to infer that the proposed building should also fall short in its dimensions of the whole frontage of the lot to be built upon. This is most essential in certain cases, for light and air on all sides, and more especially where costly structures to show to advantage must be kept away or isolated from adjoining buildings, except of course

along the business streets of a city where land is expensive and every foot of it has to be made available.

If Mr. Slater would, when he visits Quebec, take a walk along our "Grand Allée" or St. Louis road, he would, while deprecating eccentricity of design in a certain house with a most fortress-like basement, deplore the vicinity of such a costly structure to those on either side of it. In fact it so abuts on or against the gable end of the house adjoining it to the eastward that one cannot tell whether the more salient and ornamental turrets and chimney stacks of the former belong to it or to the latter; it is only when looking at it directly from the street that one can tell which is which.

Now, sir, this is a pretentious building in every respect, said to have cost some \$37,000, and it is really a pity that the architect, a Montreal man, did not advise his wealthy patron to purchase a wider lot for such a splendid structure, original though it be in design.

With regard to tall buildings of the sky-scraper persuasion, it is singular how in course of time one can become wedded to such a style of architecture when treated in a way to produce the impression that the building is made up of a lesser number of horizontal sections. Your engraving of the facade of the London Globe Insurance Building, of Montreal, is proof of a good attempt at this, where the two lower floors or stories of the building are so to say combined in a way to look like but one by separating them by a salient cornice from the stories above, and the attic or eighth floor is apparently eliminated by being separated from the floors below by a heavy eave cornice, which I believe it would have been preferable to bring down another story, and thus reduce the intervening five stories to four, while leaving two above the main entablature to form the attic portion of the edifice.

Your engraving also of the splendid new bank for Winnipeg would imply that had the two lower stories been made one of, apparently, which impression would have been given by separating those two floors from the remainder of the edifice by some salient horizontal feature such as a continuous balcony or ornamental bracket, and by making far more salient the cornice between the upper story and the one below it, or even, as in the case above alluded to, by bringing down this cornice in a way to leave two stories above it for an attic; then would also this facade have acquired something of the classical features looked for in building in general where some proportion is looked for between the three horizontal sections of an edifice—it's base or pedestal, it's shaft or main section, and it's capital, entablature or attic.

It must be admitted that where a tall and narrow building, such as there are so many of in New York and Chicago, one absolutely unrelieved in any way by separating horizontal salient features, the thing we look upon is far from being one of beauty; but when, as in the New York Waldorf-Astoria, there is, coupled with great height, a corresponding breadth of base, with a combining of the stories together in threes or fives and even sevens, there may still result a species of aestheticism, which when taken with the absolute necessity in our time for such multi-floored or storied structures render the building less distasteful.

A pertinent example of this is now being given on Broadway, New York, between 73rd and 74th street, where the new Ansonia Department Hotel, so called, which is about 200 feet square, is to be seen, or soon will be, with its 16 story facade broken up into three sections, of which the basement combines the three first floors of the building, the attic or upper portion the two or three upper flats, and the main shaft or middle section, thus reduced to only 8 or 9 stories and in a way, as above inferred, to cause it's facades, thus divided by salient balconies, to become really acceptable from an aesthetic point of view.

CHAS. BAILLAIRGE,
Architect and Engineer.

Quebec, Que.

The Queen City Plate Glass & Mirror Co., Ltd., have made extensive additions to their already large plant.

The Brick Manufacturers of Ontario have organized an Association with the following officers:—president, B. E. Bechtell, Waterloo; vice-president, Robt. J. McCormick, Warwick; secretary, Alex. Johnston, London; treasurer, Henry Janes, Delaware; executive committee, Messrs. J.W. Cawrse, London, and John Karn, Brownsville.

INTERCOMMUNICATION.

[Communications sent to this department must be addressed to the editor with the name and address of the sender attached not necessarily for publication. The editor does not hold himself responsible for the expressions or opinions of correspondents, but will, nevertheless, endeavor to secure correct replies to queries sent in. We do not guarantee answers to all queries neither do we undertake to answer questions in issue following their appearance.]

From a "Sarnia Boy": I have not been long at the business of a "Builder" though a reader and subscriber to THE CANADIAN ARCHITECT AND BUILDER, from which I have learned a great deal. I wish to ask some things about "Veneered Buildings", what are the best ways to put them up, and should they be finished.

ANS.—The frame of a veneered building is constructed in the ordinary balloon style, and should be sheathed on the outside with good inch lumber—it will be all the better if sheathed on both sides—if not sheathed, which is sometimes the case, the frame should be well braced and made stiff. There must be a good stone foundation under all the outside walls, and this must project fully $4\frac{1}{2}$ inches beyond the line of the woodwork to receive the brick if a 4 inch wall is intended; if a nine inch wall is intended, then the foundation must project nine or more inches beyond the woodwork. If there is no sheeting used, the brick wall should be plastered on the inside, a process that will strengthen the wall, and cut off much wind and cold. The brickwork must be well fastened to the wood wall at regular intervals, either with nails driven into the woodwork an inch or so, and the heads of them built into the joints of the brickwork (in this manner they act as anchors) or the bricks may be held to the brickwork by regularly prepared anchors, kept by hardware merchants. The best mortar for veneered brickwork has one-quarter cement in its composition. Where it can be afforded, there may be a stone or cement plinth around the building, and stone or cement sills for doors and windows. Wooden sills are often used; they must be set in mortar, painted two or three coats with good paint and then sanded. They should be anchored to the woodwork. The brickwork over windows and doors, must be arched, and well tied to the wooden wall.—See answer given in January No., for further information on veneered houses.

From "Banker": We are placing a new floor and ceiling overhead. Two or three of the "bank boys" sleep overhead, and we are in want of some scheme to deaden the noise. Please publish a method in your valuable journal and oblige.

ANS.—An examination of the illustration, Fig. 1, will give a good idea of an excellent method of deadening sound. Strips are nailed on the joists as shown,

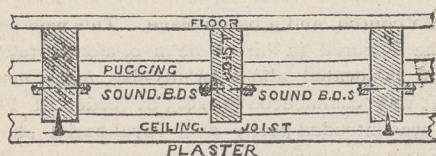


FIG. 1.—DEADENING SOUND IN A FLOOR.

and on these rest boards, called "sound-boards;" on these spread a mortar made of lime, sand and sawdust. This "pugging" or mortar may be from 2 to 3 inches thick, spread evenly over the boards and close to the sides of the joists.

From "Young-un"—I am building two stores for a

gentleman, two stories high; the lower stories are 14 feet high, and the upper ones which are intended for offices, photograph gallery, etc., are 10', 6" high in the clear. The first storey is to have walls 14 inches thick up to top of second floor joists, and the top storey is to be a single brick or nine inches thick. The walls are to be rendered or plastered inside, then strapped and lathed and plastered. Will these walls be strong enough? The shops are 22 feet wide. (2) The owner objects to my using "soft" or salmon bricks and is under the impression that the walls are too weak and would be further weakened by the use of soft bricks. (3.) Is there any danger of the walls being injured by the frost if the bricks are laid during the month of December?

ANS.—(1) A 14-inch wall for the first storey will be ample to carry all that will ever likely be placed upon it if the joists are sufficiently deep to prevent much deflection. It is quite common and good practice too—to make the top storey walls 9 inches thick. We do not know of a single failure of a 9-inch wall in cases of the kind named, when the walls were properly put up. The plastering and strapping help to make the wall much stronger. (2.) It is the common practice to use salmon brick in all inside work of walls for such buildings as yours. Of course the bricks used should be fairly burned and hard enough to be handled without "crumbling." Every kiln of bricks contains a certain percentage of "softs" which are sold along with the other bricks, when sold "kiln-count" and these "softs" are generally built in inside walls. A little judgment is necessary in placing salmon bricks. They should not be laid over openings, or where there is much weight to carry. (3) With regard to laying bricks in frosty weather, this is done now all over the country, and so far as we know, there have been no serious results follow. Much depends on the mortar used, which in all cases should be of the best for winter use. There is some difference of opinion as to the consistency of the mortar. Some bricklayers contend that the mortar should be "thin," so that it will spread easily, others that it should be as dry and stiff as possible. The latter entails more labor but in our opinion is the better method for winter work.

From a "Village Painter":—Please explain how the fine finish on woodwork is obtained after the varnish has been rubbed down with rotten stone."

ANS.:—Apply to your drug store for a box of surgeon's cotton wool and a mixture of equal parts of alcohol and sweet oil. Make a wad of a part of the cotton wool, then lay the wad on the neck of the bottle containing the mixture, and turn the bottle up for a moment to get a little of the mixture on the wad, then rub a small portion of the work until the polish satisfies you. If necessary repeat the operation with the bottle until you get the desired finish, then take another place adjoining the first and finish that, and so until you have finished the whole. Remember and always rub with a circular motion. Be careful not to get your wad too wet with the mixture. All varnishes will not take a high polish. It is best to use a hard-drying polishing varnish made for the purpose. The varnish should be hard and dry before any finishing must be attempted or failure is sure to follow. Excellent directions for wood-finishing are given in a

little book called, "The Hardwood Finisher," which every young painter and wood finisher should have.

From "Wood-Worker":—An old country carpenter tells me there is a tool for cleaning out the "grooves" or "housings" for shelving, step-ladders, stair-strings, and similar work, and is called an old-woman's tooth. Will you kindly describe the tool and the manner of operating it?

ANS.—There is a tool sold in tool stores called a "dado," which is used by carpenters for cutting grooves across the grain for shelving and similar work. It is made like a rebate plane, with the addition of "spurs" on each side and a brass depth regulator. These tools are made in sizes from 1/4 to 1 inch in width so that grooves may be made to receive shelving

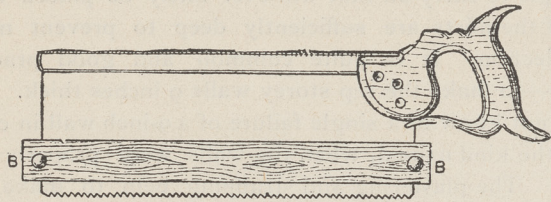


FIG. 2.—A GAUGED SAW.

of any thickness between those figures inclusive. The "Old woman's tooth," or "Hag's tooth," as it is better known by, is a different tool altogether and may be set to any depth, but the sides of the grooves must first be cut with a saw before it can be used. We show in the illustrations Figs. 2, 3, and 4, the tool and method of using it. To facilitate sawing to the right depth, on a tenon saw fix two strips of wood, B, Fig. 2, by two

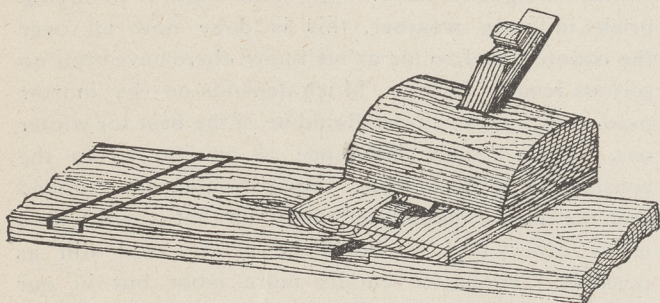


FIG. 3.—HAG'S TOOTH IN OPERATION.

wood screws as shown, putting one strip on each side of the saw so that the bottom edges are distant from the teeth the depth of the groove desired. A part of the wood to be removed may be taken out with a chisel, and, except where knots are present, this can be done at one stroke. The remaining wood can then

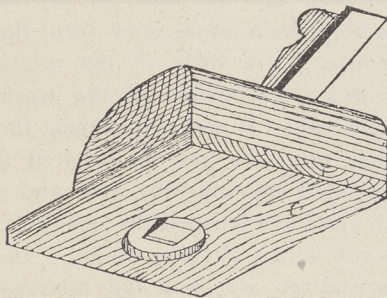


FIG. 4.—A HAG'S TOOTH.

be removed by the hag's tooth. The form of the tool is shown at Fig. 4, and can easily be made of any hardwood—beech or maple being the best—and one of

the "plough irons" may be used as a cutter. The shoe O, may be screwed on, though this shoe is not absolutely necessary, but it makes the tool work more smoothy. The cutter can be "tapped" down to make it cut deeper whenever it is required. Fig. 3 shows the tool in operation.

ANNUAL CONSUMPTION OF PORTLAND CEMENT IN THE U. S.

The following table gives the annual consumption in barrels of Portland Cement in the United States since 1892, and shows the wonderful growth in the demand for this product :—

YEAR	Domestic Portland	Imported Portland	Total Consumption
1882.....	85,000	370,406	455,406
1883.....	90,000	486,418	576,418
1884.....	100,000	585,768	685,768
1885.....	150,000	554,396	704,396
1886.....	150,000	650,032	800,032
1887.....	250,000	1,070,400	1,320,400
1888.....	250,000	1,835,504	2,085,504
1889.....	300,000	1,740,356	2,040,356
1890.....	335,000	1,940,186	2,275,186
1891.....	454,813	2,989,313	2,443,126
1892.....	547,440	2,440,654	2,988,094
1893.....	590,652	2,674,149	3,264,801
1894.....	798,757	2,738,107	3,436,864
1895.....	990,324	2,997,395	3,987,719
1896.....	1,543,020	2,989,597	4,532,620
1897.....	2,677,775	2,090,924	4,768,689
1898.....	3,692,284	2,013,818	5,706,654
1899.....	5,652,266	2,108,388	7,760,654
1900.....	8,482,020	2,386,683	10,868,703
1901.....	12,711,225		

COST PER BARREL OF CEMENT.

The following shows in tabular form a fair estimate of cost of manufacture per barrel of finished cement for a thousand-barrel-per-day plant and also a five hundred barrel-per-day plant, as given in the prospectus of a new Canadian cement manufacturing company :—

	1000 Barrels per day	500 Barrels per day
Marl delivered.....	5 cents	7 cents
Clay delivered.....	1 "	2 "
Common labor.....	5 "	7 "
Chemist, Foreman and skilled labor.....	5 "	7 "
Repairs.....	7 "	10 "
Fuel, total.....	12 "	12 "
Packing.....	3 "	4 "
Sundry.....	10 "	12 "
Total manufacturing cost	48 "	61 "
Superintendent and sales	15 "	20 "
10% interest on plant, ..	10 "	15 "
Total.....	73 "	96 "

The above estimates have been proved in the light of experience to be such as can be realized in practical work.

They include interest on investment for works and also repairs. These items make all earnings above this amount in the nature of double dividends.

Spain possesses one of the largest buildings in the world. It is at once a palace, a museum, a library, a picture gallery, a monastery, a church, and a burial place. This wonderful edifice is called the Escorial (a hill or heap of stones taken from a quarry) and is located about twenty-five miles north-west of Madrid. It was commenced in 1503 by order of Philip II of Spain, and was intended partly as a royal burial place for the Kings of Spain and partly as a commemoration of Philip's victory over the French at St. Quentin in 1557. It is built entirely of granite and measures 744 feet in length by 580 feet in breadth. At each corner is a tower 200 feet in height. The building is supposed to represent an enormous gridiron lying upside down, and this shape is believed to have reference to St. Lawrence, who was martyred on a gridiron. Twenty-one years were spent in building it and it cost £2,500,000—an enormous sum at that time even for a palace. It has been twice partly destroyed by lightning and was sacked by the French soldiers in 1708. It is said to contain 14,000 doors and 11,000 windows.

CARE OF STOCK.

BY H. T. GATES.

By stock, I mean finished product, ready for the market; material that is to be kept on hand for immediate sale. I take it for granted that most wood-working shops carry more or less stock. In order that it may be delivered to the purchaser in first-class condition, some thought must be given to its storage and preservation. It must be kept clean, accessible and

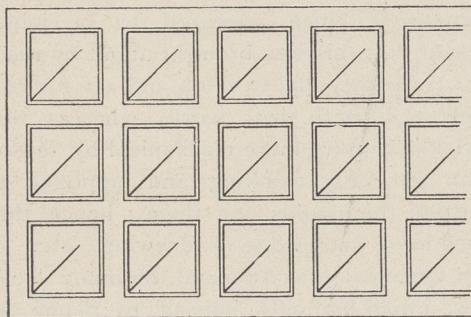


FIG. 1.—SECTION OF RACK FOR MOLDINGS—END VIEW.

conveniently arranged. Economy of space must also be taken into account.

Let us first consider what stock is usually kept on hand. Besides rough and dressed lumber there are moldings, balusters, spindles, corner and base blocks, doors, sash, blinds, mantels, as well as parts of manufactured work before it is made up, such as blind slats, door panels, turned beadings, press moldings, carvings, brackets and scroll work; also hardware, including nails, screens, sash dowels, sandpaper, glue, sash pulleys, etc.

The hardware stock room should be convenient of access for the workmen, and near the office also. It should be in charge of a trusted employe, whose duty it is to report what stock needs replenishing, and to accompany any one who requires supplies, keep the stock in order and the room properly cleaned. He may have other duties that will not be seriously interfered with by this responsibility. It is usual to have this stock kept locked up. Nobody thinks of having

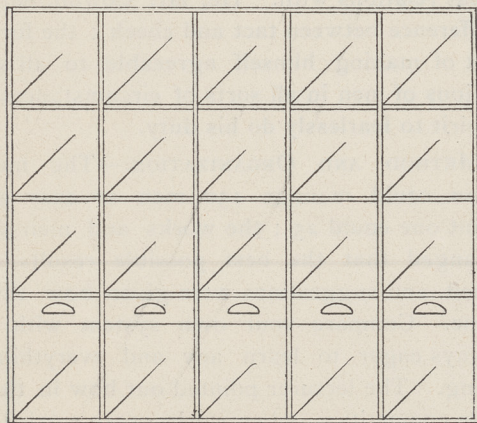


FIG. 2.—RACK FOR BALUSTERS AND TURNINGS, FRONT VIEW.

money lying around loose, without a safeguard upon it, and, though we may not have thought of it just this way, it is a fact, nevertheless, that such stock represents just so much money, and it is like putting temptation in the employees' way to leave it promiscuously around the shop. Instances have been known of lunch pails or boxes having gone home with something besides "grub" in them; and he who puts temptation of this kind in another's way is not altogether free from

blame. Therefore, I favor keeping hardware carefully stored in a room arranged for the purpose, with shelves for the boxed goods, bins for nails and other loose articles. In some factories it is the custom to sell nails, building-paper, weights, sash cord, etc.; in such instances they may be kept in the same room, all being in charge of the shipping department.

The storage of moldings is of prime importance, and care should be exercised to keep the various patterns separate, the moldings straight and free from dust, dirt and breakage. Sometimes they are kept in tight boxes with ends closed. In this way the stock is sure to remain fresh and bright. Contractors delight in getting fresh stock, just as well as house-wives like fresh provisions. The compartments of the molding rack should be lined with some thin, cheap material which will serve the purposes referred to (see Fig. 1), and the ends of the racks facing front should be numbered plainly to correspond with the molding patterns, so that they can be found instantly when wanted. It is a good plan to have a board in the office, with a piece of each pattern of molding hung on it, for refer-

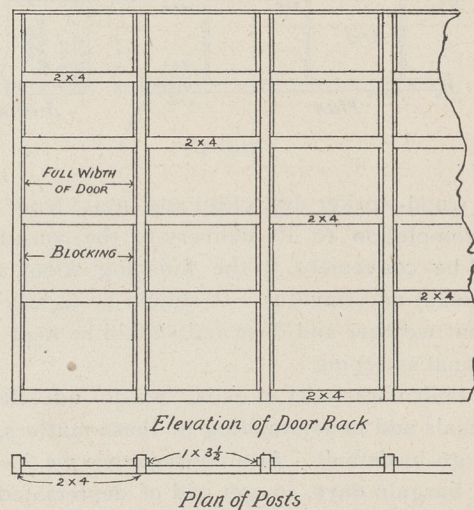


FIG. 3.

ence, and each pattern numbered to agree with the rack and molding book. For the various panel moldings, etc., similar racks hung from the ceiling, and high enough to be out of the way of the bench men, are convenient. Blind slats, being short lengths, must be kept in enclosed bins, with access at one end.

A rack on the wall, with shelves and partitions, making 12 or 15 compartments, is serviceable for storing balusters, keeping the various kinds and sizes separate. Drawers near the bottom, with partitions, will take care of small rosettes, knobs, etc.—see Fig. 2.

The storeroom for sash, doors and blinds should be kept as dust-tight as possible. Sash, doors and blinds in large quantities are usually piled flat on the floor. For small lots, racks with uprights and slats across will keep the different sizes separate. The tops of all the door piles should be covered. There are several styles of door racks in use, the width between uprights being such as to admit the widest door kept, and the height of each compartment regulated by the number of doors to be stored—see Fig. 3. The manager can arrange the sizes to suit the case and convenience.

Where the stock room is narrow, the racks should be accessible from the side instead of the end—see Fig. 4. Another method, where the ceiling is low, is

to stand the doors up in stacks, with dividing posts to carry the weight and separate the various sizes. This also applies where several sizes are kept in a limited space—see Fig. 5.

Spindles, balls, post tops, etc., are kept in bins or covered crates or barrels easy of access. Corner and base blocks are piled against the wall, as tightly together as possible, sometimes in covered boxes.

The object of the warehouse is to keep any product

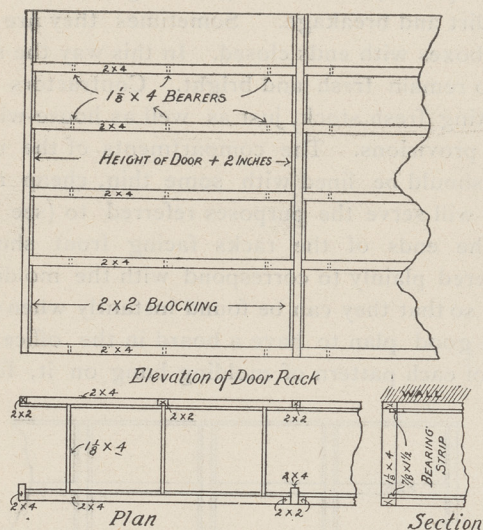


FIG. 4.

of the wood-worker dry, clean and intact from the time of its completion to its delivery to the consumer. It should be convenient to the finishing room, shipping department and elevator. It should be tightly built to keep out weather and dust, and should be kept clean by occasional sweeping.

The fault with most of us is, we do not live up to our ideals and understanding in these matters, letting things go by default. As a consequence we have occasional bargain days, to get rid of depreciated stock.

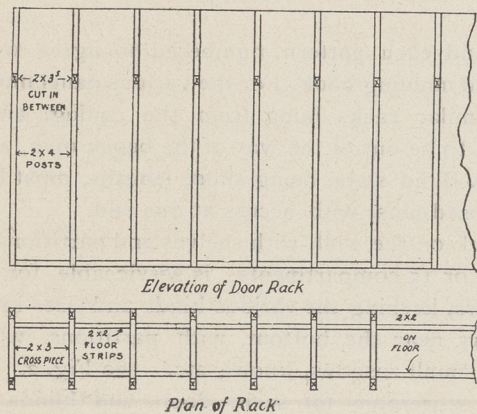


FIG. 5.

This could be obviated in a large degree by taking proper care of stock on hand. All this tells in the annual round-up for or against "good house-keeping."—The Wood-Worker.

Limestone from the quarry in Malden Township, near Amherstburg, has come into active demand of late, and from an output of 40,000 tons in 1900 and 22,000 tons last year, it is expected to produce 30,000 tons this year. Not only regular course building stone, but crushed stone is regularly in request, and 50 cars of stone dust have been given to the town. Steam hoists, modern drills, and other new machinery have been installed.

QUALIFICATIONS FOR BUILDERS' FOREMEN.

A paper on this subject was read by Mr. F. N. Cowlin, contractor, at a recent meeting of the Bristol Association of Clerks of Works and Builders' Foremen. The author suggested as the qualifications for a successful foreman—Knowledge, energy, confidence and tact, organization and honesty. Mr. Cowlin then proceeded to deal with the subject under these five headings:—

1. **KNOWLEDGE.**—He pointed out that the majority of general foremen appeared to be joiners, and suggested that this was brought about by the fact that in their trade they had to think and act for themselves by applying lines to their work, whereas the mason and bricklayer were more mechanical by reason of the foreman generally thinking and applying the lines and cutting the moulds for them; hence the former acquired more knowledge of drawing, etc. In these days of technical education and the many local opportunities, a man had only himself to blame who was lacking in this respect. Every foreman should have a sound knowledge of materials and approximate cost of labour, methods of taking and checking quantities, freehand and geometrical drawing, reading and writing specifications and business letter writing, and he should be conversant with modern business methods and an observant and critical knowledge of men, and, above all, should be a pastmaster in the particular craft to which he belonged. Mr. Cowlin pointed out how these things may be acquired by those disposed to possess them.

2. **ENERGY.**—A foreman should be energetic, example being better than precept. A slow or dilatory foreman soon make the men as bad as himself, the complaint being contagious, whereas a smart foreman was respected by those under him.

3. **CONFIDENCE AND TACT.**—A man possessing the former qualities must need have confidence in himself, a confidence born of knowledge. He could then hold his own with either his employer, the architect, or clerk of works, and this invariably ended in the foreman being generally respected by all whom he had business relations with. He, Mr. Cowlin, emphasized the difference between tact and cheek; the former was the art of making himself agreeable to all sorts and conditions of men in all sorts of circumstances, and in this spirit to fearlessly do his duty.

4. **METHOD AND ORGANIZATION.**—The methodical foreman could manage 150 men as easy as an indifferent one could 25; the works and men should be so arranged that the best possible results could be obtained, and suggestions were given how this could be done. Compare your own system with others; be always eager to learn any and everything worth knowing. The lecturer pointed out how in these days of close competition, when works were carried on on a very small margin of profit, that any laxity on the part of the foreman may turn out a loss on the contract, and a bad job for all concerned; every foreman should keep a diary, and it should be to the works what the logbook is to the ship. Approach the architect and clerk of works with a list of requirements, etc.; get verbal orders for extras confirmed in writing, and always keep a correct account of all variations, that these may be adjusted at the completion of contract.

5. **HONESTY.**—This, the lecturer said, he had placed

last, not that he thought it the least of a foreman's qualifications, but that he realized he was addressing a meeting of honest men, and he spoke with a wide and varied experience of foremen and clerks of works, and he was pleased to think that there were very few foremen in the city of Bristol holding positions in the building trades that touched secret commissions. The foreman should hold the balance true between employer and employee and show no favour.

A foreman possessing these qualities can always secure a good job and a fair wage; he would earn the respect of workmen, employer, architect, and all concerned.

RELATIONS OF EMPLOYERS AND EMPLOYEES IN THE BUILDING TRADES.

The thirteenth annual convention of the National Association of Builders held in Washington, D. C., on Oct. 28th and 29th, was largely devoted to consideration of labor issues in their relation to the building trades. Papers on the subject were presented by Thomas F. Armstrong, of Philadelphia, and William H. Sayward, of Boston, the able secretary of the Association. The latter urged employers to recognize and confer with the unions when organized and conducted on proper lines. The unions should be taught the injustice of their policy of interfering with the right of non-union workmen to sell their labor under whatever conditions they might consider satisfactory or advantageous.

Mr. Sayward concluded his exhaustive paper with the following: "In conclusion I wish to point out what seems to be a peculiar advantage for the building trades in carrying out this policy, showing, as I have previously indicated, the strength given by the very conditions which primarily seem a cause of weakness. It will be remembered that I endeavored to show that the diversity of trades involved in each and every building operation, each trade standing by itself, with a distinct employer and a distinct set of workmen, gave opportunity for almost limitless interference, in some cases a small and comparatively insignificant trade blocking progress of work as effectually as a larger trade. This may be turned to advantage by so concentrating the action of employers that any strike in any single trade, even on the work of a single employer, shall result in a lockout of all trades by all employers. This is coercive action, and it should be the study of employers to avoid it. But it would be legitimate under certain conditions, which I will endeavor to indicate in describing specifically how I think these labor issues can be most effectively met on the lines of the policy I have been discussing.

I should begin by having employers in the various building trades, the best, the most responsible in each branch in every community, united together for the specific purpose of dealing with labor issues. I should have this central body, acting in the general interest, at a seasonable time in each year, issue a call to all organizations of workmen in these various trades, requesting that they formulate their desires as to wages, hours and general conditions for the coming year and transmit them to the general employers' organization, this latter organization committing itself to laying the desires of the workmen thus expressed before the employers' organizations in each respective trade, and engaging still further to bring about agreements between the

employers and workmen through joint conferences. All conferences to be upon a uniform plan and all agreements to be under the observation of the central body in order that there may be no conflict in the terms and conditions of the various trades.

These agreements being effected and made public so that the community may understand exactly what has been done in its interest, the central body will then be in a position to demand and secure observance by both parties of the terms of the agreement.

For instance, should any branch be embarrassed by stoppage of work in apparent violation of the agreement the central body will immediately take it up, make public investigation and fix the blame and penalty. Should the blame be upon the employers' organization it would have to withdraw from the position taken, or lose affiliation with and the support of all the rest of the central body, a serious matter. Should the blame be upon a workman's organization it would have to withdraw from the position taken, or the central body would at once cause all work to be stopped in all trades, an equally serious matter, and one which would speedily end the recalcitrancy of the guilty organization.

If it be too difficult to get a central body thus effectively organized, the same thing can be accomplished by the most prominent general contractors banding themselves together for the same purpose and the same policy of action. In some respects this is the more attractive form, inasmuch as it limits those who must be in harmony to a much smaller number. But in any event this line of action gets all its strength and value upon the setting up of preliminary agreements to settle all matters of mutual concern by and through joint committees, these joint committees to formulate working rules under said agreement.

With these agreements existing it will be hard for either party to evade the penalty which will result from breaking the contract, hard for the guilty parties to avoid the just condemnation of the public. But, in my opinion, and this opinion is based upon many years of experience, the discipline spoken of will rarely, if ever, have to be applied, for agreements fairly entered into and made public are seldom violated."

MORTAR.

Like all other compounds, mortar depends for its quality upon that of its constituents, and also upon the proportions in which they are used, and the method by which they are mixed. To all intents and purposes, it is an exceedingly fine concrete, composed of an aggregate and a matrix mixed with water, its purpose being to fill up the interstices in the joints between the bricks or stones of which a wall is composed, so as to provide an even bedding surface, and render the wall watertight, adherent properties being rather valuable for securing this than needed to prevent the bricks from being pulled apart.

Thus it comes about that the more close is the jointing of a wall, the finer should be the grain of the mortar, and of its aggregate. A coarse rubble wall having wide irregular mortar joints would be best with a mortar made of a fine gravel or crushed stone, or, at least, with one which contained a considerable amount of pea sized lumps as well as finer sand amongst the aggregate, to assist in filling up the larger hollows without

undue liability to settlement. On the other hand, for well-dressed ashlar masonry, the finest sharp-grained sand obtainable should be used, there being only very small cavities to fill up, and the very thinnest possible joint being required.

Beyond this, it is necessary in all cases that the aggregate should, under a magnifying glass, display either sharp edges or a roughened surface or both, in order that the matrix may adhere to it; for, while there is little necessity to stick the bricks of a wall together, if they be properly laid, it is quite necessary that the mortar should form in itself an homogeneous substance else it will crumble into dust or wash out of the joints. Chippings of a soft stone crushed in a mortar will form an excellent aggregate, when obtainable, especially if sifted to various grades of fineness for different work; and old bricks similarly crushed are even better, as being rougher in texture. Sharp pit-sand is, perhaps most commonly specified, but it should be really sharp, and not, as is frequently the case, rounded by attrition—in reality, from the bed of an old river, though now dug from a pit. In the same way it should be free from salt, and pit-sand from a prehistoric sea beach is sometimes as salt as that gathered on the existing shore, for salt attracts moisture, and a wall built with salt sand in the mortar will scarcely ever dry.

For the same reason sea-water must not be used for mixing; but this objection against the use of sea-sand and sea-water disappears in the case of many boundary and retaining walls, which need not become dry, though the result of their use is frequently an unsightly fungus-like efflorescence on the face of the wall.

So far as the matrix is concerned, an ordinary mildly hydraulic ground stone lime is in almost universal use for ordinary building. Pure or poor limes are alike unsuitable, having no setting properly, but merely drying, and being consequently easily washed away by rain; and, although some prefer to reduce their lime to powder by slaking, it is much better to buy it ready-ground and to mix the sand with the hot lime day by day as it is required, the usual proportion being about three measures of sand to each measure of lime.

Many architects specify $2\frac{1}{2}$ measures of sand per measure of lime for good work, but it is doubtful whether the resulting mortar is greatly improved. On the other hand, if plaster of Paris be mixed with the lime, a greater proportion of sand can be carried without loss of strength, though it is hardly worth doing, owing to the extra cost of the plaster and to its solubility.

If a stronger mortar be required, as in very thin partition walls, or in weight-carrying piers, Lias lime should take the place of the ground stone lime, or else Portland cement should be used. With cement as the matrix, the proportion of sand may be raised to as much as 6 to 1 in almost all cases. Cement mortar must only be mixed as required, a little at a time, else it will commence to set before it is finally worked up with the trowel before use, and if this occurs its strength becomes greatly impaired.

Colouring substances ought not to be mixed with mortar, particularly if they are of an earthy nature, like the umbers and ochres, but a dark mortar, very suitable for the facing of red brickwork can be made by using blacksmith's ashes or foundry sand in place of ordinary yellow sand.

Lime mortar is best mixed in a mortar mill, the sand and lime being shovelled in as it revolves, three spadefuls of one to one spadeful of the other, only just enough water being added to bring the whole to the consistency of porridge; but cement mortar, having to be made in small quantities, must be mixed by hand. Like cement concrete, it should be mixed dry, the water added through the rose of a watering pot, and then mixed again with wet.—G. A. T. Middleton, A. R. I. B. A., in *The Irish Builder*.

NOTES.

Wm. Clark, proprietor of stone quarries at Sackville, N. B., recently committed suicide.

The building trades unions in Montreal claim that the steps they are taking to perfect their organization are not directed against the local contractors, but are designed to assist the latter in preventing competition from outside contractors.

The heavy rains in all parts of the country during last summer seriously interfered with quarrying operations in many sections. Pumps were utterly inadequate to keep the floods down so that work could be carried on. In addition to this many more or less serious wash-outs have been reported.

Just east of Amherstburg, Ont., a quarry has recently been opened by an Indian, probably one of the first of his race to take up this industry on a business basis. The quarry is worked by Mr. T. B. White, son of the late Wyandotte Chief, Mondoron. The quarry contains a surface deposit of moulding sand of good quality.

Mr. Wm. Owen, of London, Eng., when in Toronto recently is understood to have disposed of the American and Canadian rights on a brick manufacturing machine, which he states will produce 150,000 bricks per day, the product being capable of withstanding a crushing strain of 200 tons to the square foot. The machine will make building and paving brick and also paving slabs 3x2 feet in size and 6 inches thick.

A short time ago cinematograph photographs were taken of a monster blast at the Bonawe Granite Quarries, Scotland. This is the first time, we believe, that moving photographs have been taken of a great blast, although few subjects are more picturesque. Very striking photographs have been taken of blasts fired in this country, but inasmuch as they register only one phase of the explosion they lack the interest that complete series would show.—Stone.

Belfast.—[Scene: A rent agent's office, Royal avenue vicinity].
—Tenant (who lives in a jerry-built): "Hauf of the ceilin' in my kitchen fell down last night, and I want you to replace it."
Clerk: "What caused it?" Tenant: "The young man lodger upstairs sneezed."
Clerk: "Well, some people think that because they pay five bob a week for a house they can carry on just as though they were the only people in Fort William Park."
—Belfast Nomad's Weekly.

The summary of the building business in twenty-three of the principal cities of the United States for August, shows an increase of about 6 per cent over August, 1901, which is not nearly so good as that for July, although very satisfactory, considering the fact that August is always a slow month in business, the cities which show the largest increases are San Francisco 163 per cent, Los Angeles 130 per cent. Evidently the Pacific coast is prosperous.

The union carpenters of Buffalo served the following notice upon John Feist & Sons:—"John Feist & Sons must insist that all non-union carpenters employed by them must be gotten by this firm to join the union, and allow a walking delegate to address them in a body." These men had presumably refused to join the union, and so an effort was made to use compulsion through their employers. Mr. Feist refused to be made the tool of the union, and in consequence the union men in his employ went out on strike, despite the fact that the employers were a party to a contract with the union in regard to wages and conditions of employment which did not forbid the engagement of non-unionists. Because the firm in question refused to deny the right of free labor it had the contract it had loyally observed thrown in its face, with the consequent stoppage of work upon important contracts. The tyranny of misguided unionism would make a despot blush.—Montreal Gazette.

LEGAL.

Messrs. Wigg & Wright, builders, of Ipswich, England, recently won an action at law in the English Courts against the Friendly Society of Operative Stonemasons. The Society by threats compelled Wigg & Wright to dismiss an apprentice with whom they had entered into a contract, on the ground that he was beyond the minor age limit of 16 years. The Court of Appeal and the Court of King's Bench concurred in the conclusion that the union had acted illegally in conspiring to deprive the plaintiff of the advantages of his contract.

SHALLOW VS. LESSARD, et. al.—The appeal in this case was to the Court of King's Bench, at Montreal, from a judgment of the Superior Court, Montreal, which maintained an action brought by Messrs. Lessard and Harris, contractors, for plumbing work, to the extent of \$260.53. The respondents made a contract with the appellant for the execution of certain plumbing work in appellant's residence at Dorion, for the sum of \$200. The respondents brought action on this contract, and alleged that the work mentioned in the contract was completed to the satisfaction of appellant's architect, and that delivery was duly made to the proprietor, appellant; that the latter was further indebted in the sum of \$228.03, for other work, making a total of \$428.03, from which there had to be deducted \$150 due by respondents for advertising, leaving a balance of \$278.03, which sum was claimed by the action. The defence was to the effect that before the work had been completed or accepted, it was wholly destroyed by fire without any fault on the part of the appellant. The court below found that the work in question was undertaken partly as day work, and partly at prices stated by the respondents, who furnished the materials and workmanship; that in each case the work was incorporated with appellant's building and became his property as it was executed, and appellant had delivery before the fire. It was held, therefore, that the loss caused by the fire must fall upon the appellant, and judgment was given in favor of the respondents, as above mentioned. In appeal, the court came to the conclusion that the appellant's pretensions were well founded. The workman, in this instance, furnished the materials, and it was certain that the work had not been accepted before the fire. The loss of the thing, therefore, fell upon the workman, under article 1684 of the Civil Code, unless it were established that the loss was caused by the fault of the owner, or that he was in default of receiving the thing, which has not been shown in the present case. The judgment of the court below was therefore reversed.

WEBB V. OTTAWA CAR CO.—Judgment by Chief Justice Falconbridge in the Divisional Court at Toronto, on appeal by defendants from judgement of Lount J., for \$574.78 in favor of plaintiff and dismissing the action as against the third party. The plaintiff contracted with defendants to execute for them for above amount the brick setting to two boilers upon their property in the City of Ottawa, according to plans and specifications, and completed the work. The defendants allege that they never contracted with plaintiff, but that they did make a contract with W. J. Campbell (added as a third party to the action) to build for them two boilers of 60 horse power, and that plaintiff contracted with Campbell; that the latter did not fulfil his contract and make the boilers reasonably fit for the defendants' requirements, and that they suffered damage, but finally, with the knowledge of plaintiff, settled with Campbell. They asked relief over against Campbell if found liable to plaintiff. The trial judge held upon the evidence that Campbell had agreed with defendants to substitute for two unsatisfactory boilers that he first put in of Kingsley pattern, two tubular boilers, on condition that defendants were to do the brick work, giving them the brick already there; that defendants invited tenders for the brickwork, which was done by plaintiff for them, and though not upon the tender, yet with the approbation of the defendant's manager. Held, that trial judge was right in holding that the defendants had always been and remained still liable to the plaintiff for his account, but wrong in discharging Campbell from defendants claim to relief over against him, and that the judgment should be varied by ordering Campbell to pay to the plaintiff the sum found due by defendants to plaintiff together with costs incurred by defendants in bringing him in a party, and of the trial of their claim against him as a third party. Defendants are not entitled to recover from him costs to be taxed by the plaintiff against them, because they have failed in their contention that they were not liable to the plaintiff, upon which contention these costs were principally incurred. Defendants should pay to plaintiff his costs

of the present appeal, which is dismissed so far as he is concerned. They are entitled to recover against Campbell their costs of the appeal, having succeeded against him upon it.

USEFUL HINTS.

Connect a one-inch gas pipe from the inside of a chimney to the floor of the damp room, and all mildew will take flight through the pipe or hole, without coming back.

A paint may be perfectly pure and yet be made of such low-class materials that it ranks in value considerably below one that is largely adulterated but made of good materials.

F. H. Ross, Ross Bay, Victoria, B. C., says he has found the following an effective sizing to prevent the lime in freshly plastered walls from staining wall paper: Three parts boiling water; one part common molasses; one ounce alum. Apply hot.

For painting iron that is at times somewhat heated, raw linseed oil and pure basic white lead is the most lasting. The white lead in the hardened paint when heated seems to turn to litharge, but otherwise white lead on iron will very soon rust iron when exposed to damp or water.

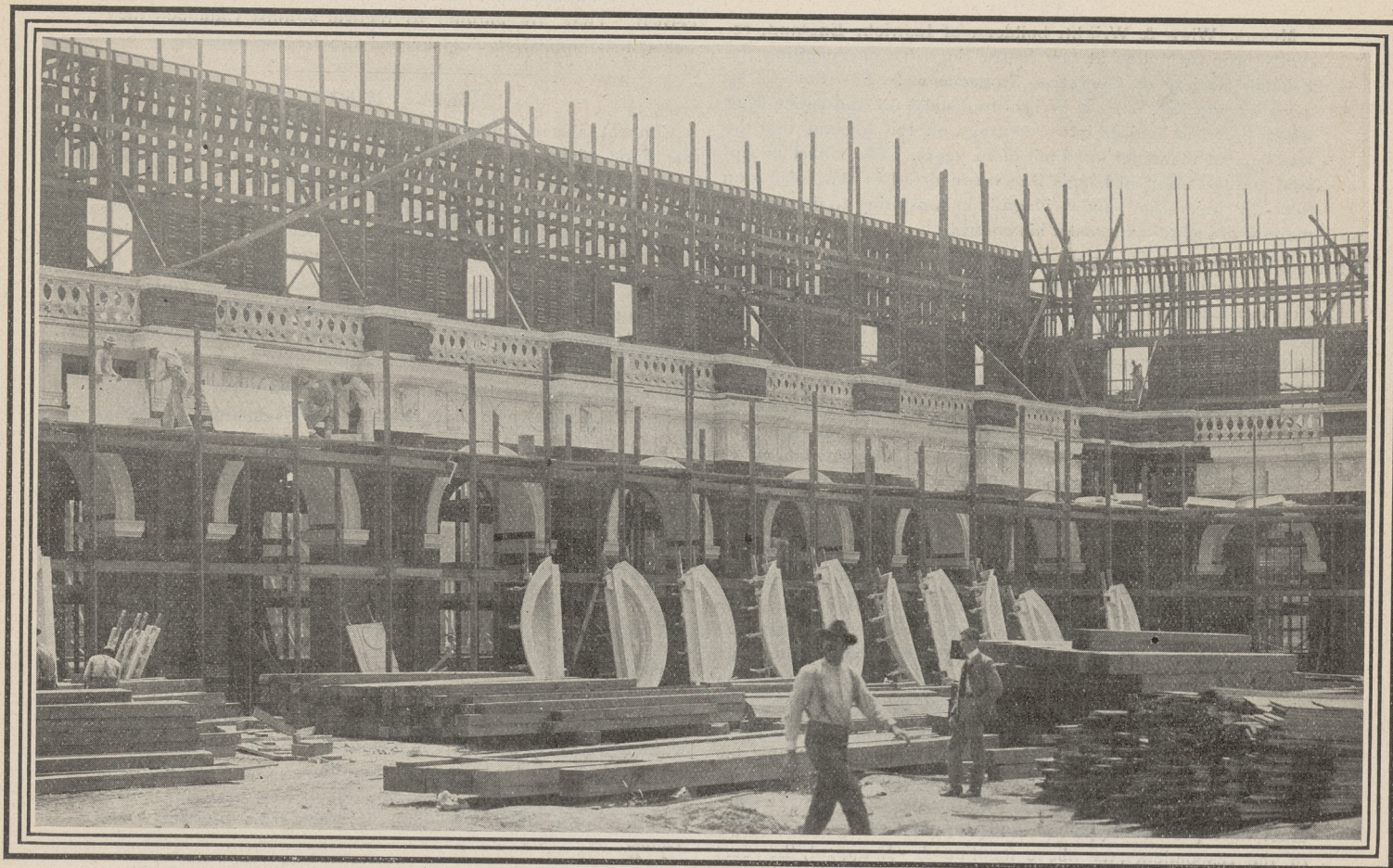
Transparent varnish for wallpaper may easily be prepared by placing 4 lbs. of Canada balsam and 1 gal. of American turpentine in a suitable vessel. Place in a hot water bath and stir at intervals until completely dissolved; strain through fine muslin and place aside for fourteen days to brighten, when it is then ready for use.

The following simple formula for a protective limewash which will not chip under the influence of the weather is given in the "Annales du Syndicat des Entrepreneurs des Travaux Publics": Slake 4½ gals. of quicklime in a suitable vessel with a sufficient quantity of hot water to make milk of lime. This is diluted, and 2 lbs. of sulphate of zinc added, and finally 1 lb. of ordinary salt. It is the latter which prevents the wash from cracking while drying.

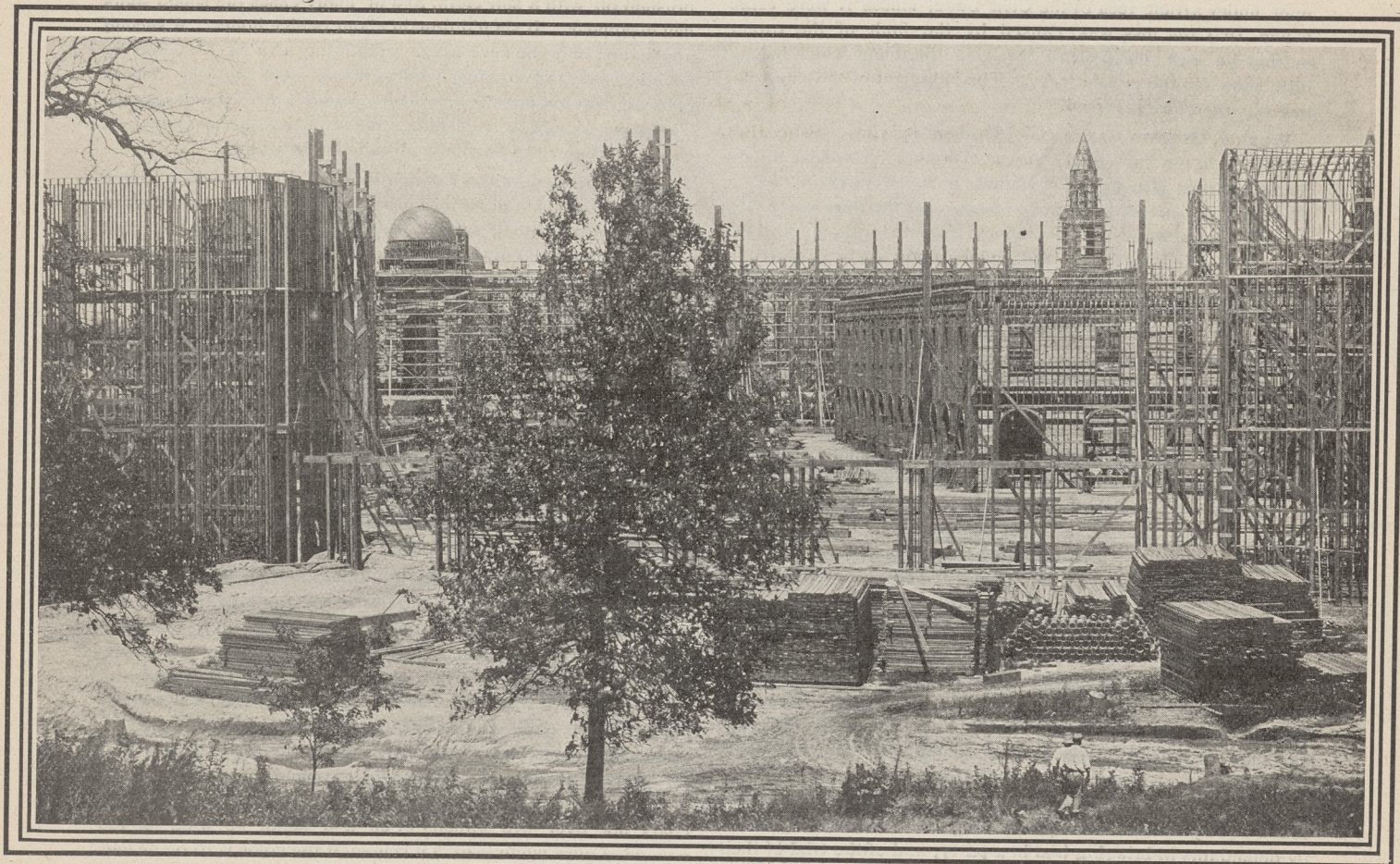
French chalk is valuable in cleaning wallpaper, and will remove grease spots from the most delicately tinted paper without damage. The chalk may be powdered and dissolved in cold water and applied to the spots with care. When dry it should be brushed off with a soft cloth, and in many cases the soiled spots will disappear. It should remain about twelve hours. A second application may be necessary, and drying can be hastened by covering with brown-paper and applying a hot flatiron. Pieces of bread, soft but not moist, will often remove dirt from the paper. The paper should be rubbed in a downward direction only, and care is necessary to prevent a streaked appearance.

A correspondent of the London Builders' Record asks: "How can one determine the various areas for the different thickness of rough plate glass to be safe for walking over when used for lights to a basement and only supported at the four sides of each sheet? Would a sheet 3ft. square and 1in. thick be safe for ordinary foot traffic in a dwelling-house?" Prof. Henry Adams, in reply says: I was unable to find any tables of the transverse strength of glass, and therefore did what "D.F.S." might have done, namely, tried the experiment for himself: the result of which, when analysed and reduced to its simplest form for practical use, was to show that for dwelling-house floors the thickness in inches should be not less than one-third of the span in feet, and for warehouses not less than half the span. The span is the shortest distance between the supports, and no allowance is made for the support in the other direction, as plates are often butted without a support at the joint.

PAINT FOR OUTSIDE WALLS OF A STONE HOUSE.—In telling a correspondent what kind of paint to use and how to mix it for the outside of the walls of a stone house, a writer in the Painters' Magazine says: We should advise a strictly pure oil paint, omitting turpentine, benzine, etc., entirely, and using only as much japan as is absolutely necessary. For first coat we would suggest that pure white lead, tinted to suit with oil color, be thinned with pure raw linseed oil and a trifle of japan, and that this priming should not contain over 10 pounds of white lead and color to each gallon of oil and japan, while in succeeding coat or coats not over five gallons of oil and japan be used for 100 pounds of pure white lead. Of course, if the color is to be deeper than a light tint, then more oil will be required. If the tint is to be very light or delicate, or if the paint is to be clear white, about 15 per cent. of zinc white may be added to the paint for the finishing coat, which will give a cleaner tone and prevent possible chalking.



COURT OF ELECTRICITY BUILDING. PUTTING ON STAFF.



LOOKING NORTH, SHOWING ELECTRICITY BUILDING IN FOREGROUND AND VARIED INDUSTRIES BUILDING WITH DOMES AND TOWERS IN DISTANCE.

BUILDINGS UNDER CONSTRUCTION FOR THE LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, MO.



HOTEL DE CLUNY, PARIS.—(WOOD)

BY THE WAY.

The owners of flats in Chicago were recently proceeded against by the medical health officer at the instance of their tenants for refusing to supply heat until the first of May as per the terms of their leases. The courts gave the landlords the option of either heating their buildings or spending a term in gaol. The present coal famine, while bringing home to the owners of flats a sense of their burden of responsibility has tended to popularize life in a flat because of the lessened responsibility which attaches to this mode of living.

x x x

Frank W. Hoyt, editor of "Stone" in a letter recently addressed to the publishers of this journal says: "There is one point on which I wish to commend your Journal, which is one of the most interesting that comes into my office—you give a good deal of attention to stone. It is my experience that architects as a rule know comparatively little about the nature of the different kinds of stone. The various publications that represent their profession give most of their attention to the consideration of structural material to iron and steel. Unless there is some change in the future, I fear that we will rear a generation of architects incapable of undertaking any great masonry structures such as have dignified architecture in the past."

x x x

When a man has built for himself a house to dwell in he ought to keep in mind not only his own ideas and requirements, but also the value which the building would be likely to have in the eyes of a probable purchaser. In this world of ups and downs the man who builds a house next year may find it necessary to sell it the year following or at some time in the future. This possibility should be kept in view from the outset. I could point you to a house built recently to meet the special requirements of the owner, but which is now on the market. It occupies a choice situation, but the value of the site as well as of the building has to a large extent been destroyed in the planning. Although expensively finished, the house does not contain more than two or three rooms of comfortable size, but is cut up into little boxes and narrow passages. If the owner should ultimately succeed in finding a buyer he will be obliged to sell at a heavy sacrifice.

x x x

I am informed on apparently reliable authority that there exists in Toronto a plumbers' combine. Half a dozen of the leading firms are understood to be working together to secure the most important contracts at very profitable figures. I am told that when an important contract is to be let the members of these firms meet together and decide that it shall go to one or

other of their number with the understanding that the firm getting the job will stand aside in favor of another member of the combination when other large contracts are given. I have been given to understand that the combine have in some instances forced up prices of heating contracts from 50 to 100 per cent. Every effort is made to prevent firms outside the ring from getting contracts, by throwing discredit on the quality of their work. Are the architects aware of the existence of this combine and of the fact that because it exists their clients are obliged to pay fancy prices for their work?

C. A. & B. STUDENTS' COMPETITION.

The publishers of the CANADIAN ARCHITECT AND BUILDER invite architectural students in Canada to submit designs in competition for a suburban or town house to cost not more than \$2,500.

The building is to be designed for an inside lot having a frontage of 50 feet, situated on the west side of a street running north and south. The adjoining lots on either side have houses on them 30 feet back from the street line and 10 feet from lot line on either side.

Competitors are required to submit two elevations or a perspective, together with plans of basement, ground, first and attic stories, drawn to $\frac{1}{8}$ scale in a manner to permit of reproduction within the limits of a double page of the CANADIAN ARCHITECT AND BUILDER, viz., 10x15 inches in size, also details to a larger scale of important or special features of the design. Drawings must be made with PEN and PERFECTLY BLACK INK ON WHITE DRAWING PAPER, OR CARDBOARD. NO BRUSH WORK WILL BE ALLOWED.

Competitors should state the materials proposed to be employed in construction.

Drawings for this competition should be signed with a motto only and be accompanied by a sealed envelope bearing the same motto and enclosing the full name and address of the designer and the name and address of his principals. They should be sent FLAT by post or express, charge prepaid, addressed "CANADIAN ARCHITECT AND BUILDER, Toronto, Canada—Student's Competition," and must reach this office not later than noon on Saturday, January 10th, 1903.

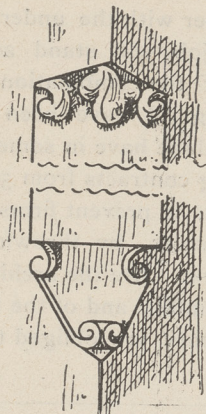
The members of the joint Educational Committee of the Toronto Chapter of the Ontario Association of Architects and the Toronto Architectural Eighteen Club have kindly consented to judge the designs submitted in this competition, and their decision will be final.

The prizes offered are: First prize, cash \$15.00; second prize, cash \$10.00, third prize one year's subscription to the CANADIAN ARCHITECT AND BUILDER ARCHITECTS' EDITION.

The publishers of the CANADIAN ARCHITECT AND BUILDER reserve the right to publish any of the designs submitted and to withhold the prizes if in the judgment of the jury the designs should not be found worthy of the awards.

Intending competitors are requested to read carefully the conditions of competition, and to strictly comply with the same in every particular.

The Department of Public Works at Ottawa is said to have under consideration the installation of a system of pneumatic tubes for the speedy conveyance of communications between the various government buildings.



CHAMFER STOP (BUTTRESS), HEDON, YORKSHIRE.

BUILDING STONES OF NOVA SCOTIA.

From a paper read before the Nova Scotia Institute on the Nova Scotia minerals for the Paris and Glasgow Exhibitions, we abstract the following notes regarding the location, character and extent of the deposits of building stones in Nova Scotia. The quarries are in most instances conveniently situated for either railway or water transport and for effective quarry work. These notes refer to the quarries in the northern part of Cumberland County, which furnished samples of their products.

Quarries at River John.—No. 1. This is the only quarry at present working in this district. It is situated at River John and about a quarter of a mile from I. C. Railway, and is connected therewith by a good road.

It contains a reddish sandstone of fine grain, and has been opened for about 350 feet in length, exposing a face so far of about 14 feet. Stones are cut here up to about 33 cubic feet, though almost any size could be obtained with larger machinery. The seams are very regular in formation and lie nearly horizontal. Worked for nearly a year.

No. 2 adjoins the first quarry, and resembles it in general characteristics, though the stone is of a lighter color.

No. 3, about a quarter of a mile up the river from No. 1, was worked for six years intermittently. Many grindstones were cut in this quarry, which yields a firm gray sandstone.

Wallace Harbor.—The Wallace Gray Stone Co., Wallace Harbor, John Stevenson, manager. This quarry is situated at Wallace, and a great part of the stone is shipped by water, though it is connected with the I. C. Railway by a good waggon road about two miles long.

Though the stone is carried to the wharf by horses, a tramway (gravity) could easily be operated, the quarry being situated on the hill. The distance is about a quarter of a mile. This quarry has been worked for a period of nearly thirty years off and on, and is still only partially developed. It produces an average of about 1,500 tons ("quarry") a year, of fine grained sandstone in two colors—"olive" and "bluish."

Blocks up to ten tons in weight and measuring fourteen feet are cut, and the greater part of the stone is shipped to the Boston and New York markets. The poorer stone is sold locally.

Wallace Harbor.—The G. P. Sherwood Co., T. C. Dobson, manager. This quarry adjoins the quarry of the Wallace Gray Stone Co., and the same remarks apply to it.

At Wallace Bridge the famous Battye Quarry is being

operated by George Battye. Stone has been taken from this quarry since the year 1809, and there is still much in sight. It is situated on the I. C. Railway and the Wallace River. Chief market, New York and Eastern States cities. Blocks up to ten tons are cut. At present 25 feet of rock is shown in the face, with seams measuring from two to six feet in thickness. This is composed of a very uniform and beautiful sandstone, suitable for monuments as well as construction work.

On the River Philip, about five miles from Pugwash, is situated the quarry of McLeod & Embree. It produces a handsome red sandstone contained in seams from two to seven feet, and shows altogether 20 feet in the face. Blocks cut to eight tons. Has been operated for upwards of 30 years, and usually ships to the States. This year all the stone quarried is being supplied to Toronto.

The Atlantic Stone Co., Limited, R. S. Hibbard, Manager.—The quarry of this company is situated on Cumberland Basin, 3½ miles from Joggins Station, on the Canada Coal Company's Railway, and 16 miles from I. C. Railway. The stone is shipped chiefly by water, in vessels up to about 300 tons. The market is mainly in the New England States, though the stones are occasionally sent much further west. 2,000 tons shipped per year. This quarry produces a very superior form of grindstone. Stones from half an inch to 14 inches thick, and up to seven feet in diameter are cut, though almost any size that could be handled is procurable.

At Lime Rock, West River, Pictou County, are sandstone quarries yielding good building stone. Samples are shown by Mr. J. H. Fraser. In the Merrigomish district the strata lying above the Productive measures yield grindstones and fair qualities of freestone.

Other localities are Pictou, and Glenfalloch. On the Basin of Minas, Cornwallis, Johnston Brook, Horton, Falmouth, Kennetcook, Nine Mile River, and Old Barns, have yielded freestones in some cases of delicate shades and good texture. In Cape Breton sandstones from the Millstone grit and the Coal measures have been used to a limited extent for building purposes.

SYENITES, PORPHYRIES AND GRANITES.—Granite is very abundant among the older rocks of the province. Among localities which have furnished it for building purposes, may be mentioned Shelburne, Queens and Lunenburg Counties. It also occurs at Aspotogan and various points thence to Halifax. As already mentioned, in describing the Gold fields, it runs continuously from Halifax to Windsor, and thence westward. It occurs again at Waverley, and runs through Musquodoboit, Jeddore, Ship Harbor, Sherbrooke, and Country Harbor to Canso. It occurs inland at the head waters of many of the Eastern rivers, and is estimated to cover a large area of the Atlantic coast district. It has, however, been quarried only at points accessible to shipping. At Halifax, it has been used a good deal about the fortifications, and a number of houses have been constructed of it, its cost, rough, being from \$2.25 to \$4.00 a ton.

In the Colequids there are masses of flesh and red colored syenite, which have afforded very handsome polished samples; but as yet have not been worked for construction. Porphyries and syenites occur in various parts of Cape Breton, but their economic value has not been tested. The following localities may be mention-

ed: St. Ann's, Boisdale and Coxheath. The crystalline diorites of Louisburg were used by the French in building their fortifications.

LIMESTONES.—This material has not been used to any extent in Nova Scotia for building purposes, although it is frequently found to stand exposure well, and to be readily quarried. Among localities yielding it, may be mentioned the Shubenacadie River, Kennetcook, Lower Horton, Thompson Station; Glengarry and Springville, Pictou County. Stones from a quarry here retain, after an exposure of sixty years, every trace of the chisel or pick. The marble, will be noticed further on.

A flaggy, arenaceous schist, known as iron stone, was extensively used some years ago for warehouses and walls in Halifax. Many of the metamorphic sandstones of the Atlantic coast would furnish a most pleasing and durable building material.

At present the supply of wood for building purposes is so plentiful that brick or stone houses are the exception. Even public buildings, churches, halls, etc., are almost always of wood; but as this material becomes more expensive, the labor of the quarryman will succeed that of the lumbermen, and our towns become something better than wooded shells blackened by smoke.

FLAGS AND SLATES.—A small amount of flagstone has been quarried on the Northwest Arm of Halifax Harbor, and at Beaver Bank. Slates were quarried to a small extent at Rawdon, and various places in Hants County, and the quality and quantity are equal to any demand. Dalhousie Mountain and West River, Pictou, are said to have good slate beds, and it is also reported from the South Mountain, in Digby and Yarmouth Counties.

At the Provincial Exhibition of 1879, slates were shown from Sackville, River John and Upper Stewiacke, which, although in the rough, were of good material.

The demand for roofing slates will become general in the province in a few years, as their superiority over the shingles in ordinary use becomes apparent.

In Nova Scotia the limestones are confined practically to the Lower Carboniferous, and are generally associated with the gypsums. There are also beds of this material, sometimes metamorphosed into marble, in the Laurentian, etc., of Cape Breton, and in the Cambrian and Silurian measures, but they do not usually form deposits of economic value in the latter measures. The carboniferous limestones are strongly developed in Cumberland, Colchester, Hants, Kings, Pictou and Antigonish Counties, and at many points in Cape Breton. They occur in beds varying in thickness from a few inches to 50 feet, and in some localities their aggregate dimensions will exceed 400 feet. Their quality varies from calcareous sandstones and clays to the crystalline pure mineral.

At Windsor, Brookfield and many other localities beds are found composed entirely of fossils characterizing the Marine Limestone formation, and give the following component parts on analysis by Dr. How:

Carbonate of lime.....	97.64
Carbonate of magnesia.....	1.10
Oxide of iron.....	.07
Phosphoric acid.....	trace
Insoluble residue.....	.68

A limestone similar to the above was extensively

quarried at Brookfield as a flux for the Londonderry iron ores.

The limestones of Pictou County are also well adapted for fluxes. The following analyses of a limestone from Lime Brook, Springville, were made for the Halifax Company at the Durham College of Physical Science:

	I.	II.
Lime carbonate	93.90	96.26
Magnesia carbonate.....	2.45	2.33
Iron peroxide.....	.59	.57
Manganese peroxide56	.55
Alumina.....	.12	.10
Sulphur.....	.03	.02
Phosphoric acid.....	.03	.03
Silica.....	2.10	1.99
Moisture.....	.18	.17

These results are confirmed by an extensive series of analyses made some years ago by the writer, embracing all the more important exposures of that mineral in the vicinity of the Pictou coal and iron deposits, but the space at my disposal would forbid its insertion. The position of the East river limestones forms an important item in their adaptability for fluxing purposes.

They occur as a band everywhere between the coal and iron, so that their transport becomes a matter of comparatively low cost, and large quantities are available by simple quarry work. A quarry at Black Rock, above Bridgeville on the East Branch, has furnished flux for many years to the Ferrona furnace.

THE ELECTRIC ELEVATOR.

Mr. Douglas, manager for Canada of the Otis Elevator Co., recently addressed the members of the Toronto Chapter of Architects on the development of the electric elevator. The first electric elevator was made in 1881, and strange to say the original principle of construction is still employed. Between 1881 and 1888 when the electric elevator became a commercial success, it suffered many vicissitudes. Its popularity is however now assured, and the modern electric elevator can be depended on to operate satisfactorily day in and day out, at any desired speed from 150 to 500 feet per minute. Many improvements have been made in the device, such as placing the operating mechanism at the top instead of the bottom of the shaft, thus securing economy of space. Elevators are now frequently installed in the more costly residences, and are fitted with automatic appliances which render accidents almost impossible. For example the door will not open except when the elevator is within two inches below or above the floor. These elevators are fitted with a push button, corresponding in number to each of the several floors, and the elevator responds in the order in which the signals are given.

The Ministerial Association of Toronto have given their partial approval to Alderman Graham's scheme for improved dwellings for the poor, but wisely suggest that such dwellings should be located in the suburbs rather than in the heart of the city.

The death is announced of Mr. Peter James Murray, a prominent and highly respected contractor of Montreal.

The Canadian Fire Underwriters' Association have decided to impose a special rate of insurance upon buildings in which are housed automobiles operated by gasoline.

We record with much regret the death of Mr. Wm. A. White, architect, of Lindsay, Ont. While superintending the building of the new hospital in that town he contracted a severe cold which developed into pneumonia and resulted in his death. Deceased had resided in Lindsay for 35 years, and during this period erected many important buildings. He was held in universal esteem.

THE CANADIAN ARCHITECT AND BUILDER

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BUSINESS NOTES.

Adams Automatic Self-Locking Sash Lock has been pronounced by architects and builders a most valuable invention.

The Art Metropole, Yonge street, Toronto, are about going into the manufacture and supply of architects' materials extensively.

Palmer's Patent Hollow Concrete Building Blocks will soon be extensively manufactured in Canada. We hope to give further particulars next month.

The Canadian Construction Co., of Toronto, are preparing to go into the structural and contracting work on a very extensive scale. Their announcement will appear in next month's issue.

The Patent Interlocking Rubber Tiling made by the Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd., has proven a success. Their new announcement will appear in next month's issue.

The York Manufacturing Co. was established four years ago for the purpose of manufacturing in Canada a full line of laundry machinery, with the following gentlemen as officers:—Messrs. J. M. Spencer, president; H. G. Macklem, secretary-treasurer; W. Hawke and A. J. Spencer, directors. Mr. Spencer is a prominent citizen of Toronto, whilst Mr. Macklem has been engaged in various manufacturing enterprises for 27 years. Mr. Hawke is also a well-known Toronto business man. Mr. A. J. Spencer is town treasurer of Owen Sound. They are now manufacturing a full line of machinery for modern steam laundry business. They instal complete plants, furnish plans and estimates for public laundries, hotels, public institutions, hospitals, etc.

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EXPERIMENTS WITH FIRE-PROOFED WOOD.

A series of tests of wood treated with various fireproofing processes was carried out recently at the Massachusetts Institute of Technology under the direction of the new Insurance Engineering Experiment Station. According to the New York Times, in general a temperature of thirty-five hundred degrees Fahrenheit seems to have reduced both treated and untreated wood to charcoal rapidly and easily, both of them blazing while exposed to the heat, although the treated wood ceased to blaze in a few seconds after being removed from the furnace, while untreated wood continued to flame for several minutes. In another experiment, intended to test the comparative resistance of the two kinds of wood to this temperature, it was found that it took about a minute longer to reduce the treated wood to charcoal than the untreated wood. At lower temperatures the fireproofing treatment appeared to be more effective. At eighteen hundred degrees Fahrenheit both the treated and untreated woods blazed and were reduced to charcoal; but when simply dropped on a red-hot iron plate the pieces of treated wood

merely charred at the point of contact, while untreated wood blazed up and was consumed. In the final experiment a block-house was built of pieces of each kind of wood and subjected to fire for five minutes. The treated wood burned where most exposed to the fire, but not readily, resisting for ten minutes before it fell, while the untreated blocks blazed up, and the structure fell in five minutes. In this test different samples of fireproofed wood were used together, and it was observed that some samples resisted the fire longer than others; but the Times reporter says that some sticks simply painted with fireproof paint "withstood the flame fully as well as the woods treated to a fireproofing solution which soaked through the entire stick". In regard to the question whether the fireproofing imparts any objectionable quality to wood, Professor Norton, the director of the experiment station, said that he had found the treated wood much more injurious to tools than untreated wood, both because it was harder and on account of some chemical action of the fireproofing solution on the steel, which caused the tools to rust very quickly.

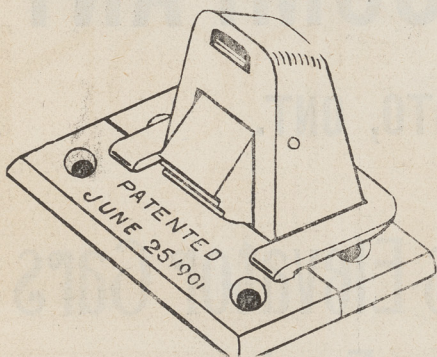
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THE ARCHITECTURE OF TORONTO.

Under the title "Notes from Toronto," Mr. R. Brown, of Boston, a well-known designer of special furniture and fittings, contributes the following to the British Architect :

On a bright Sunday morning—the last day of August—I found myself on a train crossing the Niagara River below the falls. While the train moves slowly, the Customs officer passes through, just as we are on the middle of the bridge, and presently we are in Canada. A quarter of a century had passed since I was on this same spot—seeing Niagara on my way from West to East in 1877, the year of the great fire at Saint John, New Brunswick. With that city and Halifax, Montreal, and Quebec I was familiar, but Toronto was new ground to me. As I drove from the station I saw it was entirely different from other cities in the Dominion. "Whereabouts are the oldest parts of the city," I asked my landlady over the Sunday dinner. The question did not elicit a direct reply, which was explainable by the fact that in my rambles about the city for three and a half days afterwards I found no ancient buildings and literally no slums.

The site of the city is somewhat level, with only a gentle rise from the shores of the lake northward. The streets run north and south, east and west, but the regularity of this gridiron plan is relieved by much variety in the streets and avenues. The business section, bordering the lake, does not cover a large area, and one soon comes out of it into quite urban-like districts with fine wide avenues planted thickly with rows of trees, and grass and garden plots in front

of the houses. The poplar—a favourite with architects—here adds beauty and variety to the long vistas.

Toronto's growth is but a century. Ninety years ago it had only a handful of people, now it has about three hundred thousand inhabitants. The place is new and decidedly modern, yet, architecturally speaking, it is neither crude nor raw. By a wise building law, all the modern dwellings are built of brick, not wood, which of itself is a great relief from the clap-boarded houses common to the suburbs of Boston and other New England cities. These houses are for the most part of good red brick, plain and unpretentious, compared with the wooden houses about Boston, and their architecture reflects English influence and instincts in many little ways, such, for instance, as the use of the steep pitched gable to the street, often the crowning feature of a bay window.

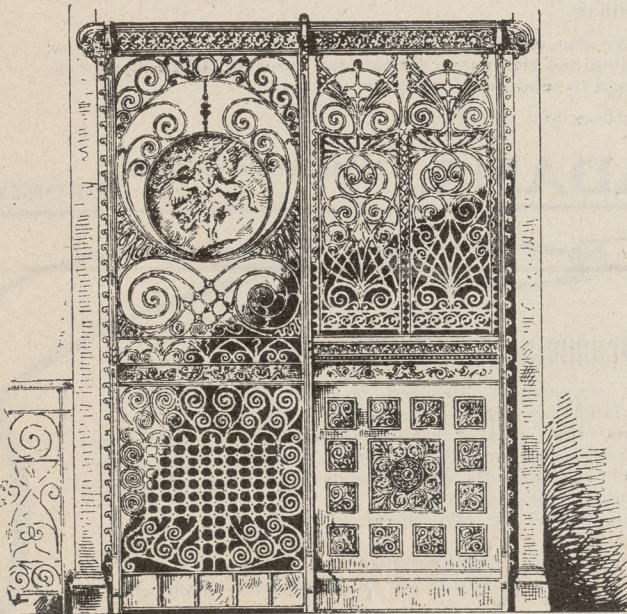
An early type of the house is to be seen in cottage-like structures of one storey and attic. These are of timber framed together with the whole exterior surface rough cast with plaster. Excepting the windows and door trimmings, the eaves, cornice, and gable rafters, no wood shows. At the angles of the building the square corners of the plastering meet without any protecting board. These houses must be about fifty or sixty years old, yet they seem in fairly good condition to-day. They recall similar looking cottages in Scotland, only in that country the walls are of rubble stone, and jambs and angles hand stone quoins, but the rough cast plaster, with its coat of whitewash was the same.

In Toronto there is a large proportion of people of Scottish birth and descent, and these cottages were probably built by early settlers from Scotland.

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Many of the buildings were carried out in what was called the "Romanesque" style, and we recognize at once the influence of Richardson. The Municipal Buildings, by Lennox, are in this style, and the favourite materials of the "Master," red freestone for walls and red tiles for roofs, have been used. This building is well designed as to proportions and disposition of masses. A high central clock tower is a prominent feature, inside of which visitors are carried up to the clock chamber, where a fine bird's eye view of the city is to be had. In the interior of the building, in one of the main corridors, a beginning has been made in the way of mural painting by an artist named Reid.

The Provincial Parliament Buildings are also in the Romanesque style, but the result of the whole is not as good as the former building. The Board of Trade Building, another structure in the same style, is very good.

The Union Railway Station is broad and simple in its general treatment, a good type of what a station should be.

In the building of banks there seems to be quite a development. Some of these are outside the general business section, generally on corner sites. They are in another style of architecture, which for want of a better name we might call "modern British," but good, and temperate in treatment. On one of the principal business streets, King Street, a very large hotel is now approaching completion. It is of light grey freestone, several stories in height, finished with a flat roof—always to my thinking unsatisfactory. I was told a New York architect designed the "King Edward Hotel," and a local architect is carrying out the work.

In the Queen's Park, a residential part of the city, I saw some fine houses of brick and stone. One of these, just completed, is "Georgian" in style, and was built for Mr. Flavell, a wealthy citizen. The surrounding grounds are artistically laid out, the whole work reflecting great credit on the architects, Messrs. Darling & Pearson, of Toronto. I had the pleasure of seeing another house, smaller and of a different type, that of Mr. Andrews, by the same architects, which deserves much praise for its simple but very artistic treatment.

Like all cities whose growth has been rapid, the business streets of Toronto present some strange anomalies—for instance, across the street from the Municipal Buildings are some of the older buildings, low in height. One wonders why they have not been taken down long ago, and substantial buildings for business purposes erected in their place. A great deal of rebuilding will soon have to be done in the business part of the city. It seems strange to see some of the streets disfigured by tall timber masts carrying wires aloft, which somehow suggests a Western frontier town of mushroom growth. However, there is much hope that Toronto's streets, as far as it is possible, will be made more beautiful, for an association of architects, artists, and others has already been formed with this end in view—a most laudable object. The streets are well paved (with some kind of cement) and thoroughly cleaned.

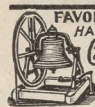
The atmosphere is clear, and there is but little smoke from manufactories. Trees are thickly planted down the avenues. Here are three elements that already help for beauty, so that the association has chiefly to look ahead, to advise on the placing of new buildings, to form a few more green squares at the intersection of thoroughfares, and to assist the general adornment by statues, fountains, and other works set in appropriate places.

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Arrangements are in progress for the Annual Convention of the Ontario Association of Architects, the dates for which are the 13th and 14th of January. As usual the sessions will be held in the Association Rooms at 94 King Street West, Toronto.

Among the papers to be presented will be one by Prof. Shortt, of Toronto University, the subject of which has not been announced, also one by Mr. E. C. Shankland, C. E., of Chicago, Ill., on "Modern Constructive Methods."

The Council are in correspondence with other gentlemen outside of the Association, and expect to be in a position shortly to announce other interesting papers by well known authors.

An interesting and instructive address is looked for from the retiring President, Mr. W. A. Langton, who has been connected with and deeply interested in the Association from its inception.

NOTES.

The Hughes Owens Co., Limited, of Montreal, whose card appears in another column have just installed a plant for the manufacture of blue and black print papers and also electric copying machines by which blue or black prints may be taken

in from two to three minutes any time of the day. Those desiring up-to-date goods would find it to their advantage to send for samples.

In a case heard recently in the Court of Session, Edinburgh, a draughtsman was giving evidence, when the opposing counsel asked: "Do you draw everything larger than it really ought to be? The reply came promptly: "Everything but my salary."

The Amherstburg Stone Quarry, situated at Amherstburg, Ont., are making extensive and valuable improvements to their great plant. Over 200 men are now employed in getting out block and building stone of all sizes and dimensions. The quality and strength is above the standard required by the Government for public works in Canada. They are doing an immense trade in crushed stone and limestone. All this is due, so the Amherstburg people say, to the energetic manager, Mr. T.W. Bellhouse. A representative of this journal was shown over this plant—the enormous amount of great dimension blocks in sight was a wonder. Some of this has gone to the Sault St. Marie canal works. Railway tracks now run right into the quarry which has been constituted a regular railway station. Mr. Bellhouse is to be congratulated upon the success of the company.

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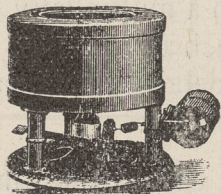
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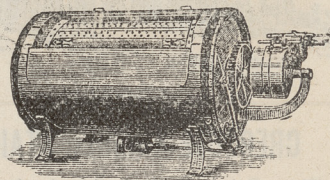
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PLASTERERS' GRIEVANCES.

The Plasterers' Section of the Toronto Builders' Exchange recently deputed Wm. J. Hynes and J. M. Gander to confer with the Toronto Chapter of Architects and the Toronto Architectural Eighteen Club relative to certain grievances which the trade are seeking to have remedied. One of these relates to the trouble and expense incurred in making repairs to work damaged by contractors and workmen belonging to the other trades. The plasterers would like the assistance of the architects in reducing the amount of repairs from this cause, and suggest the insertion of a clause in all specifications which would make a contractor liable for payment for repairs made necessary by wilful or careless damage done by himself or his workmen.

Another cause of complaint is the lack of uniformity in the terms employed by the architects in their specifications to designate particular kinds of work. It was suggested that a glossary of trade terms should be prepared and adopted for use in specifications, and

that all specifications for plasterers' work should be made as nearly uniform as possible.

The architects have approved of this suggestion, and have promised their co-operation towards putting it in practice.

The question of liability for repairs caused by careless workman is a difficult one to deal with, it being next to impossible in many instances to fix the responsibility. It seems to be generally agreed that the plumber is the worst offender in this matter. The practice of destroying new floors by dumping radiators onto them and turning them end over to wherever they are to stand, and the apprentice's habit of leaving the impression of his shapely black hand on the newly finished plaster are cause for righteous indignation on the part of both architects and plasterers.

Mr. Hynes has been requested and has consented to prepare a paper for incorporation in the annual proceedings of the Ontario Association of Architects giving a glossary of terms used in the trade and other information in a model specification for plasterers' work.

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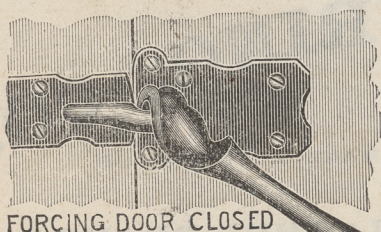
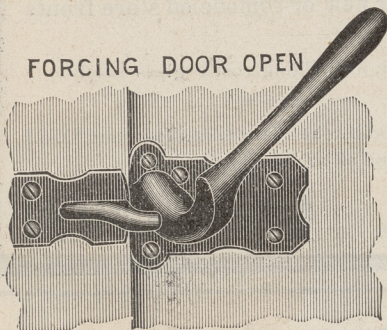
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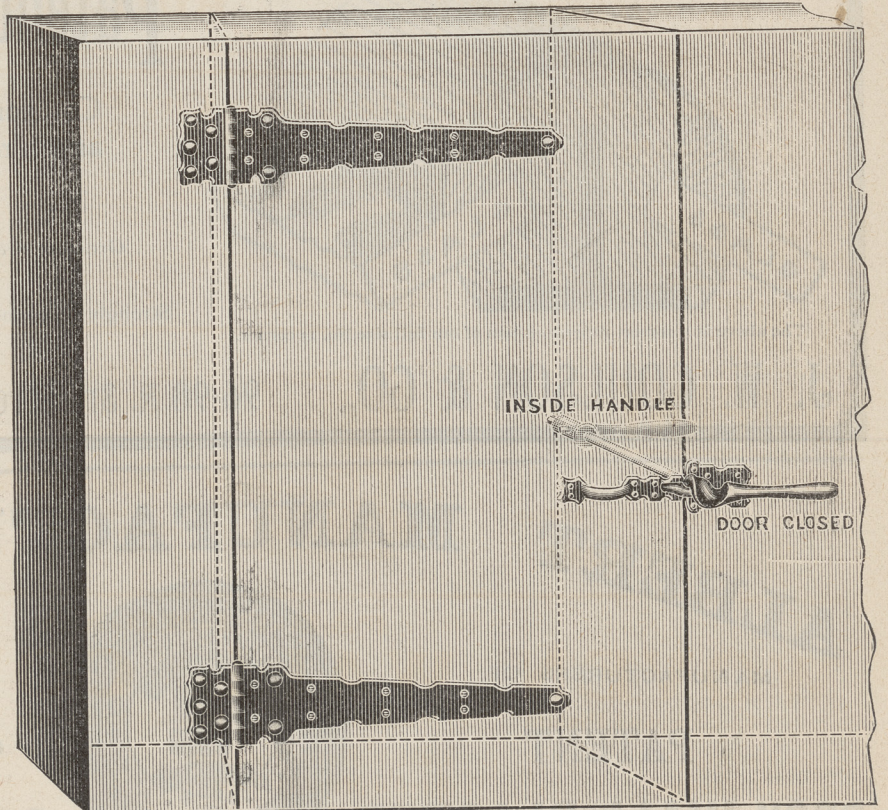
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NOTES.

Mr. Oliver McClary, one of the founders of the McClary Manufacturing Company, died at his home in London, Ont., on the 5th inst.. at the advanced age of 86 years.

Mr. W. R. Stewart, formerly with Messrs. Peck, Benny & Co. and Abbott & Co., of Montreal, has been appointed Canadian sales agents for Jenkins Brothers, valve manufacturers, of New York. Mr. Stewart will have his headquarters in Montreal.

The Canadian Heating and Ventilating Company is being organized to manufacture heating and ventilating apparatus, and if granted certain concessions propose to build a factory at Owen Sound. Among the promoters of the enterprise are Messrs. A. E. Palmer, heating and ventilating engineer, Cincinnati, J. A. Ellis, architect, A. Harshaw, of Toronto, John H. McLaughlan and Christie Bros., Owen Sound.

A Manual of Drawing, by Mr. C. E. Coolidge, Assistant Professor of Machine Design, Sibley College.—The book, which is published by John Wiley & Sons, New York, is 8 x 10 in size, contains 92 pages and 10 full page plates. Price in paper cover

\$1.00. The object of the book, as stated by the author, is "to put into permanent form a single and standard drafting room system which will tend to alleviate unnecessary burdens thrust upon the students."

The travellers and officials from the several branches of the Canada Paint Company, who have been in session for some time, have finished their deliberations and have left for their respective territories. This was the tenth annual convention of the Canada Paint Company's staff held at the headquarters of the company in Montreal, and much good is accomplished by these meetings. The year about closing has been a banner one, showing an extraordinary increase of this company's business, and the plant for 1903 will be very much enlarged to meet the heavy trade which is already in sight. The Canada Paint Company have acquired another graphite property near Petitcodiac, New Brunswick. The area is about 5 square miles and the graphite is of the finest description for painting purposes. This company announce that they will be happy to mail free their booklet describing the many uses for graphite paint if our subscribers will mention this paper.

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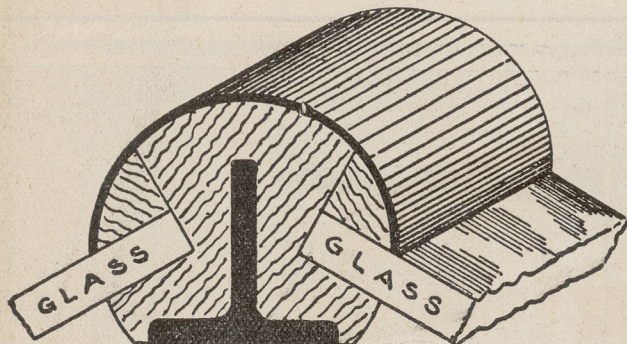
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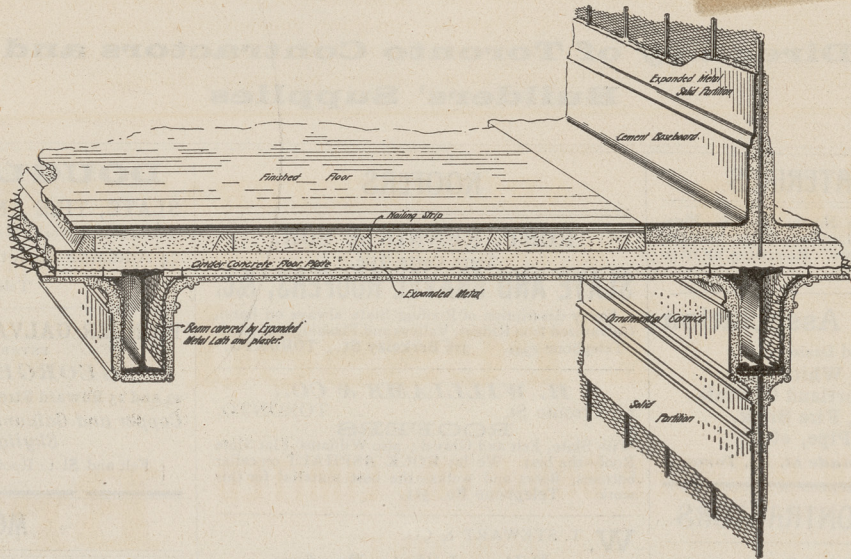
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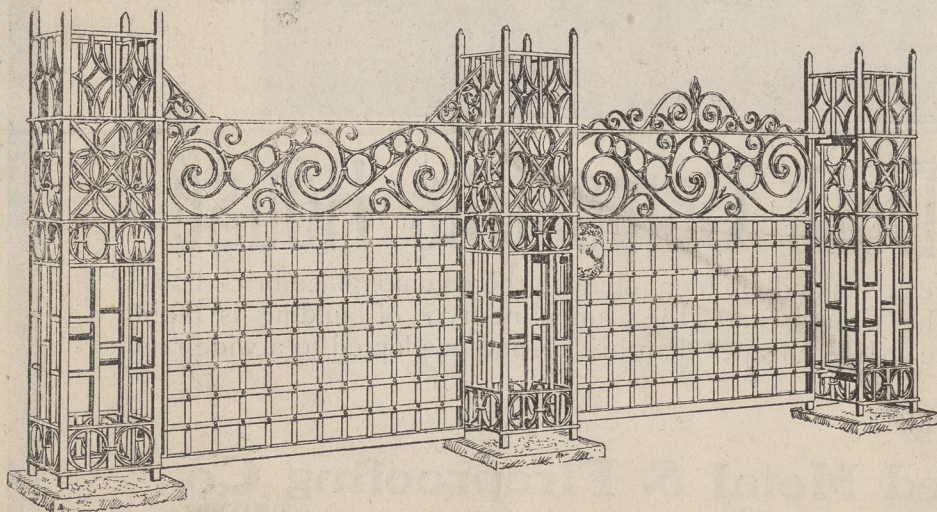
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